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" Scire est nescire, nisi id me
Scire alius sciret."

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THE RELATION OF GYNÆCOLOGY TO THE GLANDS OF INTERNAL SECRETION.

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BY

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My first and pleasant duty on occupying this Chair is to thank you for the very great honour which you have conferred upon me by electing me your President. I can assure you I greatly appreciate it, and will do my utmost to carry out the duties which the office entails. But I am met at the very outset with the difficulty of giving an inaugural address which shall be worthy to take its place beside some of

the able and eloquent addresses of past Presidents. However, I shall claim your indulgence for any shortcomings.

I propose to make a few remarks on "The Relation of Gynæcology to the Glands of Internal Secretion." There is an increasing mass of evidence that the female organism is peculiarly susceptible to physiological and pathological changes in the general endocrine system. Much of our knowledge, gleaned from the vast store of experimental and clinical observation in this new line of research, is contradictory and confusing. It will be necessary, therefore, to devote our attention chiefly to those facts which are most convincing and most generally accepted, with especial reference to those phases of the subject which relate particularly to the generative system.

Broadly speaking, each tissue of the body by means of its specific chemical sections is capable of affecting through the blood-stream other parts of the body; but the glands with which we are principally concerned are those which produce hormones with especially powerful and important physiological functions. They comprise the ovary, the thyroid apparatus, the suprarenal system, and the pituitary body.

Although by the internal secretory theory the influence of distant organs on each other is based on a chemical reaction, instead of (as was formerly believed) on a direct nervous relationship, the nervous system does play an important part, for many of the phenomena produced by the internal secretions are brought about by chemical action on the sympathetic system of nerves. The intimate relation between the ductless glands and the sympathetic nerves is especially significant from a gynæcological standpoint, on account of the peculiarly sensitive character of the female

nervous organization. This is particularly noticeable at the so-called critical periods of a woman's life, viz. at puberty, during menstruation, pregnancy and the climacteric. Although each gland produces its own particular hormone, it is important to remember that there is a certain amount of correlation between the various glands, with the result that if one of the glands is diseased, or injured or extirpated, the normal balance is upset, and the organism of the individual may be affected by the abnormal action of one or more distant glands of the group.

It was at one time thought that an internal secretion could only be elaborated by epithelial elements, but it has been discovered that structures of connective tissue origin are also capable of manufacturing an internal secretion. Examples of this are seen in the hypophysis, the suprarenals, and possibly the ovaries.

The Ovary.—That the ovary is a true organ of internal secretion is proved by substantial evidence, gained from observations made after removal of these organs, also from the transplantation of ovarian tissue and by the effects of injection of ovarian substances into the tissue.

Castration before sexual maturity causes a failure of genital development, and in adult life produces immediate regressive changes in the uterus, vagina, and external genitals, manifested by a well-marked atrophy of the parts. The exact nature of the ovarian secretion has not been determined, nor is it conclusively known in what part of the ovarian tissue the substance is manufactured. It seems probable that different portions of the ovary elaborate substances which have specific functions. There are two anatomical structures which may most reasonably be expected to be the source of hormones, viz. the corpus

luteum and the follicle apparatus. It is probable that the follicle apparatus presides over the growth and nutrition of the genitals, and that it influences directly or indirectly the general bodily development of the individual.

In addition to the follicle apparatus, the corpus luteum has been shown to be the probable seat of manufacture of an important internal ovarian secretion. In its full development the corpus luteum presents the characteristic picture of an internal secretory gland, with large pale cells lying in close proximity to thin-walled blood-vessels, an appearance much like that of the adrenals. The corpus luteum does not develop until the age of puberty, and coincident with its appearance come the cyclical changes of menstruation and the possibility of fecundation, phenomena which disappear after the cessation of corpus luteum formation at the menopause.

It is probable that the interstitial cells of the ovary, corresponding morphologically with the cells of Leydig in the male, can also manufacture an internal secretion. It has been objected that the interstitial cells, being of connective tissue origin, are not of the true endosecretory type, which is usually epithelial in character. This objection is met by the fact that certain other connective tissue elements are known to possess endosecretory power, notably the suprarenal cortex and the cells of Leydig.

Clinical manifestations of disturbances of the glands of internal secretion are caused by deficient activity (hypofunction) or by abnormal increase of activity (hyperfunction) of the glandular secreting substance. In studying the effect of the removal or destruction of a given ductless gland, we must

take into account not only the influence of the loss of its secretion on the organism, but also the changes wrought in the other members of the group, the balance of whose function has thus been disturbed.

Hypofunction of the Ovary. — Early castration prevents normal development of the genital system. It also produces changes in some of the other ductless glands, the most notable being the hypophysis, in which there takes place an increase in size of the anterior lobe. It is important to emphasize the fact that early castration does not transform the individual into the heterosexual type. The clinical signs associated with hypofunction of the ovary consist of late onset of menstruation with scanty flow, and often severe spasmodic dysmenorrhœa. It is probable that many of these changes are the result of disturbing the balance of the other ductless glands. From clinical observation it may be said that late castration in women has comparatively little effect, and that it does not entail the profound mental and physical changes in the organism of the individual that were formerly imputed to it. The amenorrhœa that is sometimes seen in fully-developed women, who have previously menstruated normally, is accounted for as a result of ovarian deficiency, a theory that finds strong confirmation in the almost immediate beneficial effect which ovarian extract sometimes has on these cases.

Hyperfunction of the Ovary. —Our present knowledge of the influence of hypersecretion of the ovary is only theoretical, and not sufficiently founded on scientific facts. Abnormal activity of the gland is supposed to be manifested by menorrhagias, and possibly by premature sexual development and over-fertility.

From a clinical standpoint the most important phase of the question is that which applies to those cases of uterine bleeding which cannot be satisfactorily accounted for on an anatomical basis, the so-called cases of uterine insufficiency in which there is severe menorrhagia without microscopic or macroscopic changes in the tissues of the uterus or adnexa. The belief that most so-called functional uterine bleeding is the result of hypersecretion of the ovary is based on the theory of the inter-relationship between ovarian secretion and menstruation. It is thought that in the ovaries is produced a substance that is passed over to and stored in the uterus and endometrium, which has the power of local dilatation of the blood-vessels, and of delaying or preventing the coagulation of the blood, thus bringing about increased or prolonged menstrual flow. The evidence, however, in support of this theory is not very convincing, and it is doubtful whether the ovarian hormone of the mature woman has any very important constitutional function beyond that of its specific action in the processes relating to reproduction.

Ovarian Transplantation.—Perhaps the most striking evidence that the ovary is an organ of internal secretion is seen in the effects produced by implantation and transplantation of ovarian tissue. It has been shown that in young castrated animals the genitalia may be made to develop normally at the time of maturity if ovarian tissue is implanted under the skin. By these experiments the ovarian influence by direct nerve connection is excluded, and it is clearly established that the ovary secretes a substance which acts chemically on distant organs through the agency of the blood-stream.

To the gynæcologist ovarian transplantation has been a subject of peculiar interest, in that it seemed to promise a solution of many pelvic problems. Practical results have, however, up to the present time been disappointing; but it is quite possible that with improved technique and with a greater knowledge of the ovarian functions some of the hopes for its usefulness may in time be realized.

In the treatment of sterility ovarian transplantation in the human female has been for the most part disappointing. Numerous cases of pregnancy following autoplastic grafting of ovarian tissue in the uterine cornua, after complete bilateral salpingectomy, have been reported, but in most of these cases the pregnancy has terminated in abortion.

Ovarian Organotherapy.—It is a matter of keen disappointment to clinicians that the new knowledge gained by science of the function and properties of the female sex organs has not led to a more effective therapy, but there are numerous reasons for this. In the first place the secretory power of the ovary in normal adult woman is directed chiefly to the pelvic organs for purposes of reproduction, and has little to do with other functions of her general organism. This is shown by the comparatively small harm that is done by the removal of the secretion. The ovary is not an organ of the same vital significance as the adrenals, the hypophysis and the thyroid, nor are its extracts as toxic as those of the other ductless glands. Moreover, it must be remembered that whereas in the body the ovarian secretion passes directly into the circulation, ovarian therapy when administered orally requires that the substance pass

through the digestive apparatus, so that a chemical disturbance in the secretion, amounting possibly to destruction, is inevitable. More satisfactory results are, as a rule, obtained after hypodermic or intravenous injection. It is in the treatment of the vasomotor disturbances of the menopause that ovarian substance gives the best results.

The conclusions that may be drawn from ovarian therapy are: (1) Ovarian substance is a new specific in the treatment of hot flushes, and the vasomotor disturbances of the menopause; (2) it is ineffective in permanent amenorrhœa with hypoplasia, but is useful in certain conditions of menstrual deficiency; (3) it is occasionally useful in cases of essential dysmenorrhœa not associated with marked hypoplasia; (4) in the treatment of sterility, instances of pregnancy following ovarian therapy are sufficiently common to suggest that in certain cases of deficient ovulation ovarian extract may effect a cure; (4) preparations of the ovarian residue are more efficacious than those of the corpus luteum alone, seeing they contain the more potent hormone from the follicular apparatus, and are free from the toxic and inhibitory element that characterizes the corpus luteum; (4) there is sufficient chemical and experimental evidence to encourage the hope that ovarian extracts, now admittedly feeble and inconstant in their action, will, under the direction of research, be produced of such potency as to be of constant specific value in the treatment of certain functional disorders.

The Hypophysis.—There has been demonstrated an intimate functional relationship between the hypophysis and the sex glands, hence the subject is of special interest to the gynæcologist. Clinically changes in the anterior lobe produce characteristic

reactions in the general organism, as is exemplified by such diseases as gigantism and acromegaly. Extracts of the anterior lobe exercise a definite influence on the sexual glands.

Extracts of the posterior lobe have a specific action on certain unstriped muscular systems, more particularly the uterus. The reciprocal action between the hypophysis and the sex glands is manifested in numerous ways. Very striking is the influence of pregnancy on the size and weight of the hypophysis.

Erdheim and Stummer made a systematic study of the hypophysis of women who had died during pregnancy, and found that the gland always becomes hypertrophied during the pregnant state. They showed that the hypertrophy takes place only in the anterior lobe, and that the posterior lobe not only does not share in the overgrowth but actually suffers a certain amount of compression.

The influence exerted on the sexual glands by changes in the hypophysis is manifested through the effect of increased or diminished function of the gland. *Hyperfunction* is due to increased activity of the anterior lobe, consequent upon adenomatous enlargement, or hyperplasia of that portion of the gland. If under the influence of a diseased condition hyperplasia of the anterior lobe occurs before puberty the ultimate result is gigantism. If the hyperplasia takes place after maturity acromegaly ensues. If *hypofunction* or diminished secretion occurs before puberty it causes retardation in skeletal growth, and the reproductive organs and secondary sex characters are infantile. When the condition develops after maturity similar though less marked changes appear, viz. adiposity, retrogressive changes in the sex organs,

with irregularities of function and various abnormalities of metabolism.

Organotherapy. — Pituitrin, the extract of the posterior lobe, has proved of the greatest value, particularly in obstetrics. Although the extract has a stimulating influence on unstriped muscle generally, it seems to exert a specific action on the parturient uterus. Its use, however, requires considerable care and judgment, as its indiscriminate employment may involve danger to both mother and child.

Pituitrin is also a useful adjunct in the treatment of intestinal paresis and distension following abdominal operation.

The experimental work that showed the influence of the anterior lobe of the pituitary on growth and sexual development raised great hopes that a potent agent had been discovered for the treatment of delayed development, infantilism, hyposexuality and amenorrhœa, but these hopes have in large measure been doomed to disappointment. Extracts of the anterior lobe have proved to be feeble in effect.

The Thyroid.—In the relationship of the ductless glands to the general organism, the thyroid from the standpoint of the clinician has assumed a position of the highest importance. In the case of the ovary and the hypophysis we have been dealing with organs whose active constituents are so subtle that our knowledge of them is vague and confused. The thyroid, on the contrary, possesses a hormone which not only manifests itself in unmistakable ways, but is capable of being replaced by organ extracts. The function of the gland is far-reaching throughout the entire organism, and represents a single chemical reaction, which, as Kendall says, is necessary for the

life of every cell and tissue of the body. It powerfully influences cell oxidation, so that when the gland is over-active it "gradually consumes the tissues as would glowing heat," an effect familiarly seen in Graves's disease. When the function of the thyroid is deficient it is manifested by various vital forms of physical and mental sluggishness, the maximum expression of which appears in myxœdema and cretinism.

The variations in size of the thyroid gland during certain phases of the female sexual life have been observed since the earliest times. At puberty the thyroid at times takes on a marked enlargement, and it is probable that many of the puberty symptoms in girls, such as the tendency to palpitation and the evidences of vasomotor disturbances, may be due to a hypersecretion of the gland at this period.

Experiments have shown a certain antagonism between the ovary and the thyroid gland. Animals that have been castrated early exhibit an abnormal length of certain bones, especially the tibia, whereas in animals from which the thyroid has been extirpated these same bones are exceedingly short.

The early extirpation of the thyroid produces a certain amount of degenerative change in the ovaries, delays the time of puberty and greatly limits the productivity of the individual. Women with diseased thyroids usually have menstrual disorders. Kocher has observed that patients on whom a too radical goitre operation has been performed suffer from menorrhagia, and he has treated such cases successfully with thyroid extract.

That the relationship between the thyroid and the

genitals is not fully understood is shown by the fact that in some cases of myxœdema there is amenorrhœa, and that thyroid extract works beneficially for the conditions both of menorrhagia and of amenorrhœa when the gland is diseased. The swelling of the thyroid is most noticeable during pregnancy, and it appears to be due to hypertrophy rather than to hyperæmia of the organ, because of its amenability to iodine treatment. Lange has made the interesting observation that women in whom the gland does not swell tend to exhibit a renal albuminuria, and expressed the belief that swelling of the thyroid acts as a protection against certain poisons which are set free as a result of pregnancy, and which without the protection of the secretion of the hypertrophied thyroid are injurious to the kidneys.

The influence of the climacteric on the thyroid gland is little known, and the subject is largely a matter of speculation; it may be that the neuropathic and vasomotor symptoms of the change of life are the result of hyperactivity of the thyroid gland.

To cases in which the sexual system is definitely influenced by the thyroid Berchardt has given the name of *thyrosexual insufficiency*. This term is applied to the malady when it occurs at the so-called sexual crises, *i.e.* puberty, the puerperium and the climacteric. At puberty in girls the condition is associated with infantilism, from which they do not always recover. Puerperal thyrosexual insufficiency is signalized by amenorrhœa, access of fat, genital atrophy, and sometimes atrophy of the breasts. The climacteric type of thyrosexual insufficiency may represent a correlated gland change. The marked bodily and facial changes that often take place about the

time of the menopause, which are popularly supposed to be the result of the loss of ovarian activity, represent more likely the ageing effects of diminished thyroid function.

The Adrenals.—The two systems of the suprarenal apparatus have each an independent internal secretory function. Most of our present knowledge of the specific secretion of the two parts of the suprarenals relates to the medullary system which elaborates the hormone called adrenalin. Of especial interest is the fact that the hormone of the suprarenal system is greatly influenced by conditions of emotional disturbance. In view of the emotional liability that characterizes woman's nature, especially at such critical periods as puberty, menstruation, pregnancy and the menopause, and the organic disturbances that occur at such times, there undoubtedly exists through the medium of the emotions an important relationship between the organs of generation and the internal secretion of the adrenals. It has been observed that animals endowed with the strongest sexual powers are also possessed of markedly developed suprarenals. Negroes are distinguished by a greater development of both sexual and suprarenal glands than is seen in white races. There is considerable evidence that the adrenal tissue of both cortex and medulla is hypertrophied during pregnancy, and probably at menstruation.

I think the facts I have enumerated show the very profound influence exerted on the pelvic organs by the endocrine glands, and in this connection I should like to acknowledge my indebtedness to Professor Graves's excellent work on gynæcology. At the present time we are beginning to realize more and more that

many of the so-called neurotic and hysterical symptoms met with in gynæcological patients are really associated with some organic lesion, and it seems not unlikely that the clue to many of these baffling symptoms will be found in some pathological change in the endocrine system.

ECTOPIC PREGNANCY.*

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ECTOPIC pregnancy is of interest to most members of our profession. Its incidence is by no means rare, and the results depend so very largely for their success upon an early diagnosis that no apologies seem necessary for reporting this series of cases. The clinical material upon which this paper is based consists of 85 consecutive cases at the Bristol Royal Infirmary and 15 private cases. The latter were added as they included three of the most interesting cases in our series.

The frequency of occurrence of ectopic pregnancy has been assessed variously. Wynne[14] found it in 1·3 per cent. of 22,500 gynæcological patients admitted to The Johns Hopkins Hospital. Schumann[9] made an analysis of all the pregnancies reported in Philadelphia in one year, and then obtained figures from all the operators in the area, thus arriving at an estimated incidence of one ectopic in 300 pregnancies.

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It is of some interest to note that up to 1876 this condition was considered a pathological curiosity, which had never been noted at many leading hospitals. But in 1883 Lawson Tait diagnosed and operated upon a case of tubal pregnancy and reported his result in a monograph,[11] which started a long series of papers upon this most interesting condition.

Ectopic pregnancy results from some factor causing delay, or arrest, in the passage of the ovum from the Graafian follicle to the uterine decidua. The following varieties can therefore occur, in theory at any rate: (1) Primary ovarian pregnancy, (2) primary abdominal implantation, (3) tubal implantation, (4) secondary abdominal or tubo-abdominal implantations, (5) broad ligament pregnancy, (6) pregnancy in an undeveloped horn of the uterus.

Of these primary ovarian pregnancy is very rare, and the very existence of primary abdominal pregnancy is still denied by most authorities, although a very convincing case has been recently reported, and Professor Rayner has kindly given me details of a case that he is about to publish, which seems quite beyond dispute.

Causation.

Any factors which can cause delay in the passage of the fertilized ovum in its journey to the uterus may originate an ectopic pregnancy. These may be conveniently grouped as follows:—

A. *Congenital.*—(*a*) Persistent fœtal convolutions of the tubes. (*b*) Diverticula leading out of the tubal lumen.[3] (*c*) Accessory ostia, which do not communicate with the tube. These are said to be fairly common, but have very seldom been seen by us.

B. *Conditions resulting from previous attacks of salpingitis.*—This theory was based upon the undoubted fact that very many tubal pregnancies follow upon an attack of pelvic peritonitis, especially if it be gonococcal in origin. It was believed that the ciliary action of the tubal mucosa was destroyed and that the lumen became locally constricted, so that a spermatozoon could pass up but a developing ovum would be arrested on its way down. These ideas were shown to be erroneous, and Opitz[7] demonstrated the most likely causation. He showed that, as a result of previous salpingitis, the long tubal plicæ tend to become adherent in places and so form conical pockets with blind ends, into which the ovum may pass and become arrested.

C. Webster[12] advanced a theory that tubal pregnancy might be regarded as *an atavistic phenomenon*, basing it upon the decidual reaction in the tube, which he considered a return to the primitive type of uterus. But Bland Sutton states that ectopic pregnancy does not occur in the lower animals—though Blair Bell has described it in rats—and there is practically no material proof of this theory.

On the whole, the commonest cause of tubal pregnancy is probably the formation of tubal pockets following on salpingitis, and the presence of accessory ostia and congenital diverticula will account for a fair proportion of the remaining cases.

VARIETIES.

The varieties of implantation in this series of 100 cases were as follows:—

Primary ovarian pregnancy	1
Secondary abdominal pregnancy ..	3
Tubal implantation	95
Pregnancy in an undeveloped horn ..	1

The specimen of *primary ovarian pregnancy* (No. 1) was a particularly fine one, in that the sac and embryo were quite intact. It has been reported in detail elsewhere. [2]

The patient had been treated for sterility of four years' duration by CO_2 insufflation, and became pregnant two months later. At 2½ months she developed typical symptoms of tubal pregnancy, and an immediate operation was performed, the ovary with the ectopic pregnancy being removed. She has since been delivered of a normal child.

The existence of primary ovarian pregnancy was strongly denied for many years by such eminent authorities as Tait and Bland Sutton, but in 1878 Spiegelberg laid down his four "rules" for the recognition of this condition, viz. (1) the tube on the affected side must be intact, (2) the fœtal sac must be in the position of the ovary, (3) the pregnancy must be connected to the uterus by the ovarian ligament, (4) true ovarian tissue must form its wall.

Since that date numerous cases have been recorded, and these include at least two in which pregnancy has terminated in the formation of lithopædia (Santti).

The three cases of *secondary abdominal pregnancy* were very interesting clinically.

The first patient (No. 2) was between five and six months pregnant, and showed all the symptoms of acute appendicitis. The temperature was 102° and the pulse-rate 112, while there was a definite mass like a hen's egg in the right iliac fossa. The fact that the pregnancy was very thin-walled was not noticed, and the case was diagnosed as pregnancy complicated by an appendix abscess or pyosalpinx. At operation the "mass" proved to be the fundus of the uterus pushed well back over to the right side by a thin-walled sac containing a fœtus. The operation was rendered very difficult by dense adhesions, but the placenta was luckily situated in the pouch of Douglas and was removed intact. The patient made an uneventful recovery, but the child survived only twenty minutes.

The second patient (No. 3) was a primigravida who had missed three periods, and was taken with a sudden attack of pain and vomiting. She came into Bristol, seven miles, in a side-car. She was found to have a biggish uterus with a mass the size of a grape-fruit in the pouch of Douglas, which was diagnosed as a pelvic hæmatocele. She refused operation as she had to go on haymaking, and this she did in spite of violent expostulations! Twelve days later she returned, and at the operation twin fœtuses were removed from the pouch of Douglas. The sac wall included the right tube and ovary; the blood-clot round the sac was already infected, but she made a perfectly normal recovery.

The third patient (No. 4) was admitted collapsed, and obviously had had an intraperitoneal hæmorrhage. There was a soft mass in the pouch of Douglas. When the abdomen was opened a fœtus and placenta were found lying on the back of the right broad ligament, and the placenta was firmly implanted into the back of the uterus and pouch of Douglas. The broad ligament contained old clot, and the case seems to have been firstly a tubal gestation, then a broad ligament pregnancy which re-escaped into the peritoneum, and gained a new implantation for the second time.

True tubal pregnancy is much the commonest type of ectopic gestation. The implantation can be interstitial, isthmic or ampullary. The average reported frequency is roughly interstitial 3 per cent., isthmic 20 per cent. and ampullary 77 per cent., and this series of cases approximates closely to these figures.

In any variety the fertilized ovum enters the tube, and is arrested during its passage to the uterus by one of the causes already discussed. The trophoblast then settles down, either on a plica, or on the actual wall of the tube between two plicæ, and then embeds itself by virtue of its penetrative power. The common site is "intercolumnar," or between two of the plicæ, so the ovum is very soon found lying in the muscularis of the tube, and surrounded by a capsule of fibrin from blood-clot and degenerated muscle tissue

(corresponding to Nitabuch's layer in a normal pregnancy), which separates it from the tubal lumen. In the rare cases of implantation on a plica the ovum will, of course, be entirely surrounded by the epithelial lining of the tube, and its area of expansion is then strictly limited. If the implantation takes place in the narrow isthmic portion of the tube early "rupture" will occur, but an ectopic pregnancy situated in the ampullary end may expand its capsule into the tube to a much greater extent before any severe symptoms supervene. A slight but definite decidual reaction occurs in the tube, and decidual cells have been found scattered over the capsule of the ectopic pregnancy in many cases, [13, 15] but no true decidua really exists as a definite structure.

The chorionic tissue and placental formation in the tube do not differ from those in intra-uterine gestation, with the exception of the fact that chorionic degeneration is common.[5] This was well seen in several of our cases, and the changes in the case of ovarian pregnancy (No. 1.) were fully studied and illustrated by Fraser in the report upon it.[2]

While these changes are taking place in the tube the uterus is also undergoing a characteristic reaction. Definite decidual formation occurs and has been very fully studied.[8] When fœtal death supervenes the decidua is expelled in small scraps accompanied by bleeding, but it may occasionally be passed in a complete uterine cast (Case No. 59).

Termination.

A tubal pregnancy may terminate in a variety of ways: (*a*) formation of a tubal mole, (*b*) tubal abortion, (*c*) intraperitoneal rupture, (*d*) intra-ligamentary rupture.

The first two varieties (*a* and *b*) can be grouped together as "internal rupture of the capsule," while the second pair (*c* and *d*) represent "external rupture of the capsule."

(*a*) *Tubal mole.*—In this condition the blood from the maternal vessels—which have been eroded by the trophoblast—enters the lumen of the tube, while the ovum itself is not completely detached. Clotting then occurs round the ovum with resulting fibrosis, and this process being repeated at short intervals results in the formation of a mole. The mole is usually expelled into the peritoneal cavity at a later date, though occasionally fibroid remnants of a mole are found at operation which must have been in the tube for years.

(*b*) *Tubal abortion* is naturally most common in ampullary implantation, and consists of the expulsion of the ovum which has been *completely* detached by the blood. The ovum and blood are forced into the peritoneal cavity by the contractions of the intact portion of the tube. The colic and accompanying bleeding render it a matter of great difficulty to distinguish between tubal abortion and tubal rupture.

In some cases the blood will clot firmly round the fimbriæ of the tube and form a "peritubal hæmatoma."

(*c*) *Intraperitoneal rupture.*—In this condition the capsule of stretched tube, which encloses the ovum, is so eroded and thinned by the trophoblast that it gives way, and very severe bleeding may take place into the peritoneal cavity, which will produce all the classic symptoms of an abdominal catastrophe. In many cases the bleeding is not so severe, and the blood clots about the affected portion of the tube and produces the paratubal hæmatoma. In other cases

clotting will take place in the pouch of Douglas, giving rise to a "pelvic hæmatocele." It must be noticed that the real cause of the bleeding is erosion, and not distension of the tube wall, and so the term "rupture"—long established in our nomenclature—is really a misnomer. As about four-fifths of the tubal surface is covered with peritoneum, it is natural to find this variety much commoner than the next, viz. :—

(*d*) *Intraligamentary rupture.*—Here the tube gives way at a point on its wall which is lying over the tissues of the broad ligament. The blood passes into the broad ligament and distends it, forming a "pelvic hæmatoma."

In addition to the above varieties there are three very rare terminations which are occasionally seen. In a few cases of intraperitoneal rupture the ovum may be reimplanted in the pelvis and continue to grow, and so produce a "secondary abdominal pregnancy," including the so-called "tubo-abdominal pregnancy." Three cases are here recorded (Nos. 2, 3 and 4).

The ovum in the case of intraligamentary rupture may reimplant itself within the layers of the broad ligament and develop in that situation. Both these varieties may go to full time; and viable, but usually deformed infants, have been removed at term. We have had no case of this at the Royal Infirmary.

Finally, a "lithopædion" may be formed, and be discovered years later. This condition seems to be much rarer than it used to be, probably owing to the great improvement in early diagnosis which has taken place.

In one of our cases (No. 100) the pregnancy occurred

in a rudimentary horn, and gave rise to violent bleeding at the fourth month, although no symptoms at all had occurred till that time.

DIAGNOSIS.

There are obviously two very different conditions to be diagnosed as ectopic pregnancy, viz. (1) cases of severe intraperitoneal bleeding, and (2) those in which the loss of blood is slight, or has taken place into the tube or broad ligament only.

In the first class there is no difficulty in deciding that a very acute abdominal catastrophe has occurred. The patient is blanched, sweating, and cold. The pulse is thin and rapid. Free fluid can be demonstrated in the flanks, and usually there is well-marked air hunger. In these cases the diagnosis is fairly obvious, while there is never any question as to the urgent necessity of operative interference.

It is in the second group of cases that the difficulty of diagnosis arises. Wynne[14] states that at Johns Hopkins only 46 per cent. of cases were correctly diagnosed in 1919, while Brady[1] in 1923 found it had improved to over 70 per cent. in the same clinic. The correct diagnosis of an ectopic pregnancy is obviously of the greatest importance, and every case operated upon early can be regarded as having been saved from a grave disaster; for it is quite impossible to foresee the occurrence of a tubal mole or abortion in place of a tubal rupture.

In the first place, we regard the history of a missed period as of little importance. Brady[1] found it present in only 50 per cent. of his cases, and in this series one in six had not definitely missed any period at all, while in many more this history was doubtful. The complaint of irregular attacks of sharp pain of a *colic*

type is a much more important symptom, and when this is accompanied by irregular uterine bleedings—usually small in quantity—the diagnosis may be considered to be practically established on the history alone.

On pelvic examination it is usually possible to distinguish a mass which is very tender, to one side of the uterus, or in the pouch of Douglas, often associated with enlargement of the uterine artery of that side which can easily be felt pulsating in the fornix affected. The uterus itself will be enlarged and softened and suggests an early pregnancy. In some cases small clots of blood may be felt in the pouch of Douglas. The attacks of colic are due, of course, to the bleeding into the tube and small intraperitoneal hæmorrhages, while the vaginal bleeding is the result of the attempts at getting rid of the degenerating decidua, and occurs coincidently with the colic, due to the tubal bleeding which has killed the embryo. A sign which is sometimes of great value, and much vaunted by French gynæcologists, is the "rising pain," present in about 45 per cent. of this series. It consists of a dull ache passing up from the pelvis and running to the right shoulder, where it persists as a steady ache.

In our opinion any woman who has suffered with attacks of colic and irregular uterine hæmorrhage should be at once diagnosed as a suspect ectopic pregnancy, and be placed under close supervision. If no alternative and certain diagnosis be found, she should be treated by abdominal section without undue delay.

In a series of 29 cases at the Royal Infirmary, operated upon on the evidence of history only, we found 26 ectopic pregnancies, 1 pyosalpinx, 1 twisted ovarian cyst, and 1 normal pregnancy; an error

rate in diagnosis of 10 per cent., but only 3·5 per cent. when the question of the need of an operation is considered, and this fully justifies the unnecessary operations.

There is one point which cannot be too heavily insisted upon, and that is the very real danger of vaginal examination in these cases, unless it is possible to open the abdomen at once.

One of the patients in this series (No. 30) was examined in the ward with great care, and almost at once complained of a severe pain. Within three minutes the pulse ran up to 120 and she became pale and collapsed. She was rushed into the theatre, and the abdomen was opened and the bleeding dealt with; but she lost quite 1½ pints of blood during the few minutes involved in getting her on to the table and under the anæsthetic. Also, a number of years ago, a case was admitted to a surgical ward at the Royal Infirmary and examined there in bed. The same events occurred, and the patient died before the abdomen could be opened, although there was only a few minutes' delay.

It seems desirable to make the tentative diagnosis of an ectopic pregnancy on the history, and to delay confirmation by vaginal examination till the patient is in hospital, or a nursing home, where she can be operated upon immediately, if necessary.

The chief *differential diagnosis* is from incomplete abortion. In this series of cases 56 were not obviously "immediates," and of these ten were actually diagnosed as "retained products" and curetted, *i.e.* an error of 18 per cent. The true diagnosis was made in eight of these cases while the patient was on the table, and the abdomen was immediately opened. In the two remaining cases (Nos. 63 and 97) the condition was not diagnosed and both patients died, being the only deaths in the series. It is of interest to note that one of these cases (No. 63) was both an ectopic and an

intra-uterine pregnancy. We have found the most helpful differential points to be the fact that colic-like pain is very unusual in incomplete abortion, unless the uterus is actually in the process of expelling its contents, while the bleeding is very much more profuse than is usual in a tubal pregnancy. Also no swelling can be felt in the broad ligament or in the pouch of Douglas in the case of abortion. In cases where there is a large pelvic hæmatocele it is possible to mistake the swelling for a retroverted gravid uterus, and attempts to reduce it may have diasatrous results (No. 26). The hæmatocele may also be mistaken for a twisted ovarian cyst.

A case of abortion with lead colic was saved from operation as for ectopic gestation by the chance observation of a "blue line."

As an aid to diagnosis in very doubtful cases the introduction of an exploring needle into the pouch of Douglas may give valuable information.

Treatment.

Operation is the only possible form of treatment, once the diagnosis has been made. Even if the symptoms point to a tubal abortion, it is much safer to open the abdomen immediately. Two of these were diagnosed as cases of tubal abortion by competent observers, and yet were found to be early tubal ruptures at operation, and might have bled violently at any minute.

In cases with slight bleeding it is our custom to remove the affected tube and retain the ovary when possible, and it is most important to inspect the other tube. Twin tubal pregnancy is not unduly rare, and three cases of triplets have been recorded. Also, the

other tube may be so diseased as to require removal. The occurrence of an intra-uterine and tubal pregnancy at the same time is comparatively frequent. Novak[6] records 276 cases, and it occurs twice in our series (No. 50 and 63).

In one case in this series a second tubal pregnancy occurred in the stump of the tube removed at a previous operation for ectopic pregnancy (No. 34), a condition of which Hasselblatte[3] reports 21 cases. Four of this series had had previous tubal pregnancies on the other side (Nos. 7, 66, 68, 85).* This is quite a usual percentage. Smith[10] analysed 144 cases, and found that 80 (56 per cent.) became pregnant again. Of these 23 were ectopic (28·6 per cent), or 16 per cent. of the whole 144 cases. Other authorities give similar figures, so that Sampson and Smith consider it quite justifiable to remove both tubes at the first operation. This is not our custom.

In cases of ruptured tubal pregnancy with severe bleeding immediate operation is, of course, indicated, and whenever possible a blood transfusion should be given during the operation. This has a most dramatic effect, and undoubtedly saved the lives of three of our cases. Before the abdomen is opened two Carwardine intestinal clamps are placed ready. The abdomen is opened and the hand is at once plunged down into the pelvis, and the mass of clot and tube grasped and clamped on both sides, so as to stop the bleeding. This should *always* be done, as furious bleeding often begins as soon as the abdomen is opened, and it is useless to try and mop it away

* Since this paper was read on the 12th November another case of repeated tubal pregnancy has been operated upon at the Bristol Royal Infirmary, which is included in the list of cases as No. 13 on the first occasion.

before the clamps are applied. As it is not possible to see if the bowel is adherent to the sac, we use these light bowel clamps, which do no injury to any adherent gut which may be included in their grasp. The blood and clot are rapidly removed, for which we prefer a suction apparatus, and then the mass between the clamps is inspected and the tube and pregnancy removed. It is our habit to remove the clot and blood, for although it has been stated that the blood will be reabsorbed with benefit to the patient, we cannot but think it is a peritoneal irritant and forms an excellent nidus for sepsis. We have no experience of using the blood baled from the peritoneum for transfusion into the patient's vein, which is highly spoken of by many German authors. Rapidity of operation is essential, and immediate steps must be taken to combat shock. We find an electrically-heated blanket invaluable. A saline infusion is given as required.

We have had no experience of operating upon viable broad ligament pregnancies. Finally, a smear should be examined for gonorrhœa and a Wassermann test done during convalescence.

Results.

Out of this series of 100 cases two deaths occurred, being 2 per cent. of the total. The remainder made a good recovery, and this is comparable with the collected figures of Schauta, which showed a death-rate of 5·7 per cent. in operated cases as against 87 per cent. in cases treated by expectant methods.

The deaths were as follows. Case No. 63 had an intra-uterine abortion, badly infected, as well as a tubal pregnancy.

Peritonitis followed the curetting. Laparotomy three days later was followed next day by death from general peritonitis. Case No. 97 was diagnosed as "retained products." The temperature was 101° on admission, curetting was followed by acute peritonitis, and on laparotomy twenty-four hours later a necrotic broad ligament pregnancy was found. Death followed from general peritonitis.

On the *diagnosed* cases, therefore, the mortality was nil.

SUMMARY.

In summarizing our series of 100 cases we have been faced with one great difficulty, viz. the classification of those cases which do not show a definite tubal rupture. These cases rank high in our series owing to early diagnosis. The condition found showed a thin tube distended with a blood-clot, but no definite gap in the tube wall. Although many of these would have eroded through in a short time, we have thought it advisable to classify them as "tubal abortion," as the far preferable term "intratubal rupture," advocated by Berkeley and Bonney, is not in general use.

Total cases, 100.—Died, 2=2 per cent; recovered, 98=98 per cent.

Site of Ectopic Pregnancy.—Ovarian, 1; abdominal, 3; tubal, 88 (intestinal, 4; isthmic, 3; ampullary, 80; stump, 1); broad ligament, 7; rudimentary horn, 1.

Termination.—Abortion, 45; mole, 5; rupture, 45 (intraperitoneal, 38; broad ligament, 7).

Clinical aspects on admission.—Collapsed, 32; not collapsed, 63.

Chief symptoms in not collapsed cases: pain, 55; hæmorrhage, 43; tumour, 26.

Previous ectopic pregnancies.—4 cases.

Age.		*Parity.*	
20 years ..	1 case	0 ..	25 cases.
21–30 „ ..	41 cases	1 ..	32 „
31–40 „ ..	34 „	2 ..	13 „
41 „ or over	4 „	3 ..	13 „
Not stated ..	20 „	4 ..	7 „
		5 and over	8 „
		Not stated	2 „

Years since last delivery.		*Weeks since last regular period.*	
1 year ..	10 cases.	1–2 ..	4 cases.
2 years ..	10 „	3–4 ..	18 „
3 „ ..	11 „	5–6 ..	20 „
4 „ ..	5 „	7–8 ..	25 „
5 „ ..	8 „	9–10 ..	5 „
6 „ ..	3 „	11–12 ..	12 „
7 „ or more	15 „	13–16 ..	5 „
Not stated ..	13 „	17–20 ..	1 case.
		20 and over	3 cases.
		Lactating	2 „
		Not stated	5 „

Number.	Age.	Parity.	Years since last delivery.	Weeks since last regular period.	Symptoms. Pain.	Hæmorrhage.	Tumour.	Collapse.	Side.	Type.		Days in Hospital.	Result.
											PRIMARY OVARIAN.		
1	23	0	—	10	++	0	0	0	R.	—	Tubes insufflated four months previously.	20	A.
											SECONDARY ABDOMINAL.		
2	27	0	—	22	+	0	+	0	—	—	Child lived twenty minutes.	21	A.
3	37	0	—	12	+	0	+	0	R.	—	Placenta on right broad ligament.	50	A.
4	38	3	5	9	0	0	+	+	R.	—	Broad ligament pregnancy ruptured into peritoneal cavity and placental tissue and living fœtus in pouch of Douglas.	19	A.
											TUBAL PREGNANCY.—IMMEDIATE OPERATIONS.		
5	?	3	9	5	+	+	+	++	R.	Rupture	Intravenous saline ..	30	A.
6	28	0	—	7	+	+	+	+	L.	Rupture	—	16	A.
7	30	0	—	12	+	0	0	+	L.	Rupture	Previous ectopic two years ago at Hull. Interstitial also inter-uterine pregnancy.	21	A.
8	26	1	$1\frac{1}{2}$	8	++	+	+	++	R.	Rupture	Isthmic	29	A.
9	26	1	8	8	+	+	+	0	L.	Rupture	—	20	A.
10	33	1	7	24?	+	+	0	0	L.	Rupture	—	26	A.
11	36	8	$\frac{5}{12}$	?	+	+	0	0	L.	Rupture	Right tube ligated also	18	A.
12	32	0	—	7	+	0	0	+	R.	Rupture	—	17	A.
13	?	0	—	?	+	+	0	++	R.	Rupture	Blood transfusion ..	29	A.
14	27	2	?	?	0	0	0	++	L.	Rupture	Intravenous saline ..	14	A.
15	36	3	?	12	+	0	+	+	R.	Rupture	—	24	A.
16	36	3	?	5	+	+	0	0	R.	Rupture	—	17	A.
17	33	1	?	9	+	0	0	++	?	Rupture	Intravenous saline, *vide* No. 68.	29	A.
18	25	1	8	10	+	+	0	+	R.	Rupture	—	21	A.
19	30	2	$\frac{5}{12}$	*	+	0	0	+	R.	Rupture	*Lactating	13	A.
20	29	2	5	3	+	0	0	0	R.	Rupture	Tubo-ovarian pregnancy	15	A.
21	28	3	2	8	+	+	0	++	?	Rupture	—	23	A.
22	29	0	—	12	+	0	0	+	R.	Rupture	—	14	A.
23	38	2	?	5	+	+	0	+	L.	Rupture	—	21	A.
24	?	1	9	7	++	0	0	+	L.	Rupture	Intravenous and saline	18	A.
25	25	1	4	2	+	0	0	+	R.	Rupture	—	28	A.
26	39	3	7	6	+	+	0	+	R.	Rupture	Ruptured when retroversion was reduced.	14	A.

Number.	Age.	Parity.	Years since last delivery.	Weeks since last regular period.	Symptoms. Pain.	Hæmorrhage.	Tumour.	Collapse.	Side.	Type.		Days in Hospital.	Result.
27	?	2	2½	6	+	0	0	++	?	Rupture	Puerperal sepsis at last confinement.	21	A.
28	23	0	—	4	+	+	0	0	L.	Rupture	Gonorrhœa	21	A.
29	?	0	—	14	+	0	0	++	?	Rupture	—	20	A.
30	27	1	1½	5	+	+	+	+	R.	Rupture	Ruptured during vaginal examination.	21	A.
31	32	3	1½	8	+	0	+	0	R.	Rupture	Interstitial	18	A.
32	22	0	—	8	+	0	0	+	R.	Rupture	Interstitial	28	A.
33	37	3	10	8	+	++	0	++	R.	Rupture	Isthmic	19	A.
34	22	0	—	4	+	0	0	++	R.	Rupture	In stump of tube removed at previous operation 6 months before.	28	A.
35	26	1	4	3	+	+	0	+	L.	Rupture	—	12	A.
36	31	4	3	13	+	+	0	++	R.	Mole	—	19	A.
37	29	3	7	2	+	++	0	+	R.	Abortion	—	29	A.
38	31	0	—	6	+	0	0	+	R.	Abortion	—	44	A.
39	39	0	—	7	++	0	0	+	R.	Abortion	—	16	A.
40	33	6	5	8	+	+	0	0	L.	Abortion	*Vide* No. 66	17	A.
41	?	0	—	3	+	+	0	++	L.	Abortion	—	16	A.
42	31	1	5	3	+	0	0	+	L.	Abortion	—	18	A.
43	26	1	4	4	+	++	0	+	L.	Abortion	—	11	A.
44	?	2	?	5	+	+	0	0	?	Abortion	—	21	A.
							TUBAL PREGNANCY.—OPERATION OF ELECTION.						
45	?	4	10	8	+	+	+	0	R.	Abortion	—	20	A.
46	?	5	1	*	0	+	+	0	R.	Abortion	* Lactating. Broncho-pneumonia.	62	A.
47	22	0	—	2	+	+	0	0	R.	Abortion	Septic hæmatocele ..	56	A.
48	29	1	5/12	7	0	++	+	0	L.	Abortion	Right tube ligated also	25	A.
49	29	2	6	8	+	+	+	0	L.	Abortion	Right hydro-salpinx removed.	20	A.
50	?	4	7	8	+	+	+	0	R.	Abortion	A 5/12 pregnancy in uterus	25	A.
51	?	1	5	?	0	+	+	0	L.	Abortion	—	18	A.
52	25	0	—	8	+	+	+	0	L.	Abortion	—	20	A.
53	38	4	9/12	?	+	+	+	0	R.	Abortion	Was curetted first, but diagnosed on the table.	32	A.
54	?	?		14	+	+	0	0	L.	Abortion	Was curetted first, laparotomy 5 days later.	25	A.
55	23	1	4/12	3	+	+	+	0	L.	Abortion	—	29	A.
56	?	1	9/12	10	+	+	+	0	R.	Abortion	Curetted first, but diagnosed on table.	21	A.
57	32	1	2	7	+	0	+	0	R.	Abortion	—	17	A.
58	27	0	—	24	+	+	0	0	L.	Abortion	—	24	A.
59	?	1	3	12	+	++	0	0	L.	Abortion	Right tube ligated also. Passed a uterine cast.	15	A.
60	30	2	3	7	+	+	+	0	R.	Abortion	Right parovarian cyst ..	18	A.
61	32	1	?	6	+	+	0	0	R.	Abortion	Appendicectomy also ..	19	A.
62	34	1	7	3	+	+	0	0	R.	Abortion	*Vide* No. 85	14	A.

Number.	Age.
63	33
64	29
65	34
66	36
67	34
68	35
69	33
70	24
71	34
72	29
73	42
74	39
75	17
76	32
77	?
78	?
79	43
80	28
81	44
82	24
83	28
84	28
85	36
86	25
87	?
88	31
89	?
90	30
91	26
92	26

Days in Hospital.	Result.	Number.	Age.	Parity.	Years since last delivery.	Weeks since last regular period.	Symptoms. Pain.	Hæmorrhage.	Tumour.	Collapse.	Side.	Type.		Days in Hospital.	Result.
21	A.	63	33	1	?	6	+	+	0	0	L.	Abortion	(1) Curetted and removal of septic intra-uterine abortion.		
21	A.												(2) Peritonitis 3 days later—laparotomy and removal of septic tubal abortion. Drainage.	4	D.
20	A.														
21	A.														
18	A.														
28	A.														
19	A.	64	29	1	?	12	0	+	+	0	R.	Abortion	Curetted, but diagnosed on table. Left hæmatosalpinx also removed.	18	A.
28	A.														
		65	34	1	4	6	+	+	+	0	R.	Abortion	—	17	A.
12	A.	66	36	6	3	9	+	+	0	0	R.	Abortion	*Vide* No. 40. Previous ectopic.	14	A.
19	A.														
29	A.	67	34	2	9	5	0	+	0	0	L.	Abortion	Curetted 3 weeks previously for chronic uterine sepsis. Subtotal hysterectomy.	23	A.
44	A.														
16	A.														
17	A.														
16	A.	68	35	1	3	6	+	0	0	0	L.	Abortion	*Vide* No. 17. Previous ectopic.	24	A.
8	A.														
1	A.	69	33	0	—	4	+	0	0	0	R.	Abortion	Left ovarian. Double salpingectomy.	14	A.
21	A.														
		70	24	1	$1\frac{1}{2}$	3	+	+	0	0	R.	Abortion	—	11	A.
		71	34	1	10	16	+	0	0	0	L.	Abortion	—	18	A.
		72	29	2	$1\frac{3}{4}$	4	+	+	0	0	L.	Abortion	Curetted, diagnosed on table.	35	A.
0	A.	73	42	7	3	5	+	+	0	0	R.	Abortion	Left ovarian dermoid ..	31	A.
2	A.	74	39	4	5	12	0	+	0	0	R.	Abortion	Curetted and diagnosed on table.	30	A.
6	A.	75	17	0	—	4	+	0	0	0	L.	Abortion	—	21	A.
5	A.	76	32	4	2	12	+	+	0	0	L.	Abortion	—	17	A.
0	A.	77	?	3	?	4	+	0	0	0	R.	Abortion	—	21	A.
		78	?	0	—	3	+	+	0	0	R.	Abortion	—	21	A.
5	A.	79	43	6	7	6	+	+	+	0	L.	Abortion	—	16	A.
8	A.	80	28	1	1	4	+	0	0	0	R.	Abortion	—	21	A.
0	A.	81	44	0	—	6	+	+	0	0	L.	Abortion	Polypus extruding through cervix, hysterectomy.	18	A.
2	A.														
5	A.	82	24	1	2	5	+	+	+	0	L.	Rupture	Small left ovarian ..	22	A.
		83	28	2	1	2	+	+	++	0	R.	Rupture	—	23	A.
0	A.	84	28	1	4	7	+	0	0	0	L.	Rupture	Appendicectomy	17	A.
	A.	85	36	3	3	6	+	0	0	0	L.	Rupture	Previous ectopic, *vide* No. 62.	18	A.
7	A.	86	25	4	$\frac{7}{12}$	6	+	0	0	0	R.	Rupture	—	21	A.
4	A.	87	?	3	?	?	+	+	0	0	R.	Rupture	—	18	A.
5	A.	88	31	7	6	12	+	0	+	0	R.	Rupture	—	22	A.
		89	?	1	3	?	0	+	+	0	L.	Mole	—	18	A.
	A.	90	30	1	8	3	+	+	0	0	R.	Mole	Curetted and diagnosed on table.	23	A.
	A.														
	A.	91	26	0	—	6	0	+	0	0	L.	Mole	Right tube ligated also	20	A.
		92	26	2	2	8	+	+	+	0	L.	Mole	—	17	A.

Number.	Age.	Parity.	Years since last delivery.	Weeks since last regular period.	Symptoms. Pain.	Hæmorrhage.	Tumour.	Collapse.	Side.	Type.		Days in Hospital.	Result.
											BROAD LIGAMENT PREGNANCIES.		
93	35	8	¾	12	+	+	+	++	R.	Broad Ligament	Secondary rupture into peritoneum. Intravenous saline.	28	A.
94	?	1	?	?	+	0	+	0	R.	Broad Ligament	—	?	A.
95	?	1	6	3	+	+	+	0	L.	Broad Ligament	—	21	A.
96	30	2	5	?	+	+	0	0	L.	Broad Ligament	—	23	A.
97	43	3	2½	12	+	+	+	0	L.	Broad Ligament	Curetted as intra-uterine abortion. 2 days later acute peritonitis. Gas, pus, and macerated fœtus in broad ligament.	5	D.
98	36	?	?	8	+	+	++	0	R.	Broad Ligament	Appendix removed ..	24	A.
99	27	0	—	11	+	+	0	0	R.	Broad Ligament	—	16	A.
											PREGNANCY IN RUDIMENTARY HORN.		
100	27	1	3	16	+	0	0	++	L.	Rupture	Ruptured left rudimentary horn with abdomen full of blood.	11	A.

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NECROSIS OF THE MYOCARDIUM.*

BY

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THE term necrosis, if it is taken to include the death of a few cells, can be used to cover certain of the more severe degenerative changes as well as massive destruction of tissue. On this basis necrosis of the myocardium is divisible into two main groups, with certain sub-divisions.

1. *Toxic necrosis* :—
   (A) Infective in origin.
      (*a*) Invasion of the myocardium by organisms.
      (*b*) Bacterial toxins causing cell death.
   (B) Non-infective in origin.
      (*a*) Endogenous poisons.
      (*b*) Exogenous poisons.
2. *Ischæmic necrosis* :—
      (*a*) Partial interference with blood supply.
      (*b*) Complete obstruction of blood supply.

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In this group secondary infection may alter the histological picture of the primary ischæmic lesion.

Amongst the first group of toxic necroses there are the degenerations which occur during the course of severe anæmias, chronic diseases, and protracted febrile states. The "cloudy swelling" seen in the heart muscle is not a necrosis, as cell death is not involved, and there is little evidence that "fatty degeneration" produces anything more than a severe functional incapacity of the cell. On the other hand, in some acute infections there may be a "hyaline degeneration," in which there is coagulation of cell protoplasm, loss of striation, and destruction of the nucleus, corresponding to Zenker's degeneration of muscle seen typically in typhoid fever. This condition certainly involves cell death, and also provokes an inflammatory reaction around the affected area.

The specimens described here are illustrative of the infective and the ischæmic types of necrosis.

The first was found, post-mortem, in the heart of a boy, aged 14 years, who came into hospital on the fifth day of an acute illness, and was found to be suffering from an acute periostitis of the fifth right metacarpal bone. The signs and symptoms pointed mainly to a meningeal infection, with pyrexia, headache, vomiting, cervical rigidity, positive Kernig's sign and œdema of the optic discs. There was no clinical evidence of cardiac involvement.

At the post-mortem examination the pericardium showed no abnormality, but there were a few petechial hæmorrhages beneath the epicardium. The endocardium appeared healthy, but a few whitish specks in the myocardium suggested the possibility of miliary abscesses. Microscopically it was evident that the myocardium was acutely congested, and there was some cellular infiltration of an inflammatory nature between

PLATE I.

Coronal sections through right auricle.
Areas of infarction—I.

the muscle cells. Further examination showed that there were minute foci of suppuration in the ventricular wall.

The second specimen showed a gross hæmorrhagic pericarditis, and a large abscess in the wall of the left ventricle which is threatening to break through the small amount of muscle left intact on either side of it. This patient was a child of 9 years of age, and the primary lesion an acute osteomyelitis of the upper end of the right humerus. Both lungs showed recent infarctions, and the liver and kidneys contained small abscesses.

In both these cases the *staphylococcus aureus* was the causal organism, and it is noticeable that when this organism gains entrance to the general circulation it tends to produce the most destructive of lesions. Thus, the endocardium may be the site of great crumbling vegetations swarming with cocci, while the myocardium may show acute necrotic foci such as are present in this case.

Such destructive lesions are very surprising when it is realized that the same organism is the usual cause of the localized skin lesions, such as boils, whitlows, impetigo, and carbuncles.

One result of these minor infections is that a relative immunity is established, so that a small number of cocci may even circulate in the blood-stream without detriment to the individual. It is when this resistance is lacking, or is temporarily lowered, or when the infection is overwhelming, that the destructive lesions within the body become possible.

The onset of pericarditis in a case of acute osteomyelitis is often looked upon as a fatal complication, but that it is not necessarily so is proved by a case recently reported from St. Bartholomew's Hospital[1] in which drainage of the pericardium was successful, and the patient, a girl of $4\frac{1}{2}$ years, left the hospital convalescent after an illness of $2\frac{1}{2}$ months.

The second group, that of ischæmic necrosis, has attracted considerable attention during recent years, and the case of cardiac infarction published by Dr. Carey Coombs and Professor Hadfield in 1926[2] is typical of this condition. The whole subject has been fully reviewed by Gibson[3] in this country, and more recently by Levine[4] in America. From these it appears that the necrotic area is usually limited to the ventricular walls. In this respect a case seen at the Bristol General Hospital a short time ago presented unusual features.

The patient, a man of 63 years, had complained of feeling ill for the first time three weeks before admission to the hospital. On admission he was acutely dyspnœic, perspiration was profuse, and the conjunctivæ slightly jaundiced. The temperature was 101° F., the pulse-rate 124 to 140 per minute, with a completely irregular rhythm. The blood-pressure was 110 mm. Hg. systolic, and 60 mm. Hg. diastolic. There was no œdema of the legs or back.

On examination, the area of cardiac dullness was found to be increased to the left, five inches from the middle line. The apex beat could not be palpated, and the heart sounds were weak and distant. There was dullness at both bases of the lungs, and crepitations and feeble breath sounds were noted. The abdomen and nervous system showed no abnormality.

He died on the third day after admission, and a post-mortem examination was carried out on the following day. Both lungs were very œdematous, and there were dense pleural adhesions on the left side of the chest, and also over the right upper lobe. The pericardium contained about 200 cc. of deeply blood-stained fluid with a few shreds of fibrin. The heart itself was somewhat enlarged, more especially the right side. The mitral, aortic, and the valves of the right heart appeared to be comparatively healthy, except for a small fibrous tag attached to the margin of the septal cusp of the aortic valve.

The right auricle was considerably dilated, and showed an area of acute endocarditis. An incision made into the auricular

wall in this area revealed a picture closely resembling that seen in infarction of the ventricular muscle. There was a rather poorly demarcated zone of congestion or extravasation mottled with yellowish patches. The outer surface showed a definite pericarditis. The ventricular muscle presented the appearances of a moderate "fibroid myocarditis," but there was no evidence of old or recent infarction. Atheromatous changes were found in all the main branches of the coronary arteries, but no obvious obstruction or thrombosis could be demonstrated. Of the other organs the liver and the spleen were slightly enlarged and the cortical zone of the kidneys showed some reduction.

These post-mortem appearances taken in conjunction with the clinical features suggested that ischæmia of the right auricular muscle was the underlying factor and the cause of the disorder of function which resulted in death.

The blood-supply of the right auricle is derived from small vessels given off from the right coronary artery, and Dr. Perry's injection experiments show that these arterioles are very small, but numerous. Obstruction of any of these vessels in the thin auricular wall must inevitably produce damage which would involve both the pericardial and the endocardial coverings as well as the muscle itself. With chronic lung infection present, as in this case, a secondary or terminal infection of the damaged structures is almost certain.

Histologically, sections of the auricular wall showed thrombosis of the arterioles running in the musculi pectinati, and organization of the thrombus was well advanced. The muscle cells were swollen and granular, and the few remaining nuclei stained very poorly. In some areas there was considerable extravasation of blood, and in others infiltration by plasma cells and lymphocytes. The pericardial surface showed a pericarditis with a higher proportion of polymorph cells and fibrin, while the endocardium showed the changes of a subacute endocarditis. The complete picture of this case is, therefore, that of a man of 63 years whose coronary arteries are atheromatous. Thrombosis occurred in some of the arterioles supplying the right auricle, producing morbid changes which resulted in severe cardiac disorder, lowering of blood-pressure, and œdema of the lungs, and lastly a terminal infection of the damaged serous coverings of the heart.

I am greatly indebted to Dr. Carey Coombs and to Mr. John Griffiths for allowing me to use their case notes.

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[1] Beattie, "Suppurative Pericarditis," *Clin. Jour.*, lviii. 522:
[2] Coombs and Hadfield, *Lancet*, 1926, i. 14.
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CONGENITAL HEART DISEASE AS SEEN IN ELEMENTARY SCHOOL CHILDREN.*

BY

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THIS paper is based on a review of 121 children referred by the School Medical Service for an opinion on their cardiac condition, and in whom the signs found were considered to be due to a congenital malformation of the heart. They have been divided into groups according to their physical signs, which will be dealt with more fully in considering the individual groups. An idea of the incidence of these conditions may be gathered from the fact that there are in Bristol about 15,500 school children, which (assuming that none have escaped detection) gives an incidence of about 0·22 per cent. Actually it is probably a little higher than this.

Symptoms definitely attributable to the cardiac lesion, such as cyanosis, finger clubbing and dyspnœa, were observed in five, or 4·1 per cent. Attacks of cyanosis and dyspnœa on exertion were found in a further sixteen, or 13·3 per cent. Seven gave a history of "heart attacks." These attacks are very puzzling. As a rule the child is said to go pale suddenly,

* Read to the Bristol Medico-Chirurgical Society on 10th December, 1930.

to be dazed for a time, and to recover by an attack of crying. One child in this series was definitely epileptic. It was considered wise to advise restriction of games and drill at school in nine cases, or 7·5 per cent., and only one child was unable to attend school at all.

In view of the fact that in infants congenital heart disease often accounts for otherwise unexplained marasmus, it was thought worth while to compare the weights of these children with the average weights for their age. This comparison is shown in Figure 1, in which the curve for the average normal weights is taken from that given in Robert Hutchison's *Lectures on Diseases of Children*. There is obviously no very marked stunting in the growth of these children. The few low weights were evenly distributed amongst all the groups, and no one physical sign was found to be associated with a stunted child.

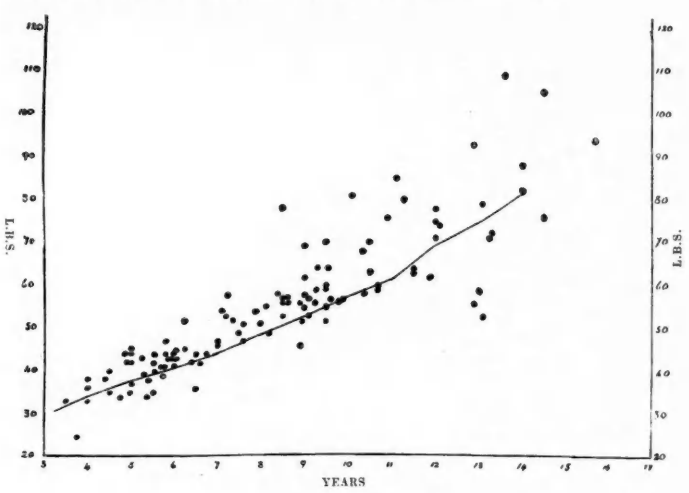

FIG. 1.
Showing ages and weights compared with the normal curve.

Only one child was found to be markedly backward, and that was a child who, although attending an ordinary school, at the age of 5½ had some difficulty in talking. The sex incidence shows a slight preponderance of males, there being 70 boys and 51 girls in the series. There were three cases of family incidence, when two members of the same family were found to have signs of a congenital cardiac malformation. In two of these the signs were similar in the two children, and in one they differed.

In one interesting family the eldest of three, a girl, had definite signs but no symptoms.

The next child, a boy, had more marked signs, moderately severe symptoms. A younger sister, who when examined had no signs, was shortly afterwards killed in a motor accident. Post-mortem examination revealed no cardiac deformity, but at the site of the junction of the obliterated ductus arteriosus the pulmonary artery showed a funnel-shaped depression about an eighth of an inch deep. She had apparently just escaped a patent ductus arteriosus.

Group I.—This is composed of 41 children, 25 boys and 16 girls. In these the one common physical sign was a systolic murmur varying in intensity, but always maximal at the inner end of the third or fourth left rib spaces. While this murmur may be audible all over the præcordium, it is never heard in the back. It is accentuated on auscultation of the patient in the "crawling" position. Some of these cases showed in addition a central systolic thrill, but in none was there any clinical cardiac enlargement. All of these children attended school normally and did the usual games and drill.

One was an epileptic, and two complained of occasional "heart attacks" such as I have already described. Three gave a not very definite history of dyspnœa on exertion, and two of vague præcordial

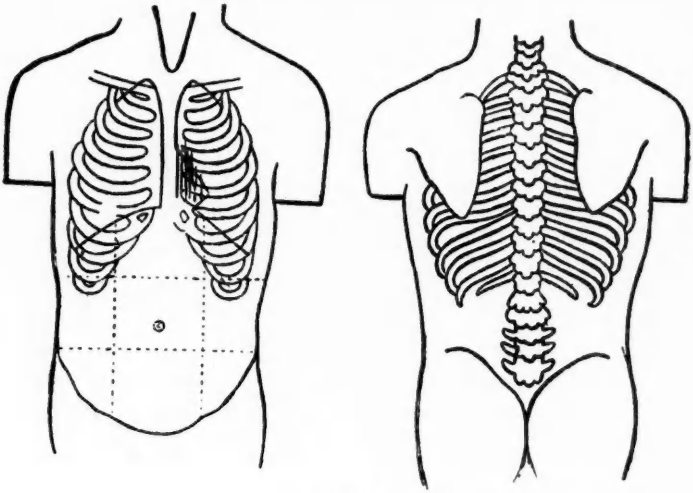

FIG. 2.
Showing the physical signs found in Group I.

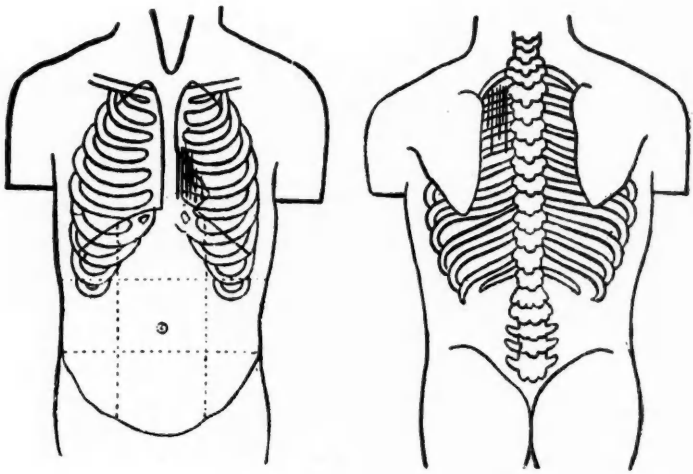

FIG. 3.
Showing the physical signs found in Group II.

pain. One had a rather high colour, and is the child I have already mentioned, who was not talking normally at the age of $5\frac{1}{2}$.

Group II.—This group consists of 5 children, and differs from the first in that while the murmur is maximal in the same position it is also heard at and above the pulmonary area and in the left back.

Again, none of these showed any clinical evidence of cardiac enlargement. One of them had a high colour, clubbed fingers, and became cyanosed and dyspnœic on exertion, and while attending school was unable to do games and drill.

One other also had a high colour and suffered from attacks of dyspnœa and cyanosis, but was able to attend school normally. All five of the children in this group were boys.

Group III.—There were 41 children in this group, 23 boys and 18 girls. The sign characteristic of these is a systolic murmur maximal at and above the pulmonary area and audible in the back. Most of them also have an accentuated pulmonary second sound. Six showed clinical signs of cardiac enlargement in the shape of increased cardiac dullness. Four of these children were cyanosed, and of these two also had clubbing of the fingers.

Six became cyanosed or dyspnœic on exertion, and a further three were noticed to have a high colour. Four of the cases in this group complained of "heart attacks." It was considered advisable that one of these children should not attend school at all, and five others were advised to do no games or drill. All the others attended school normally with no ill-effects.

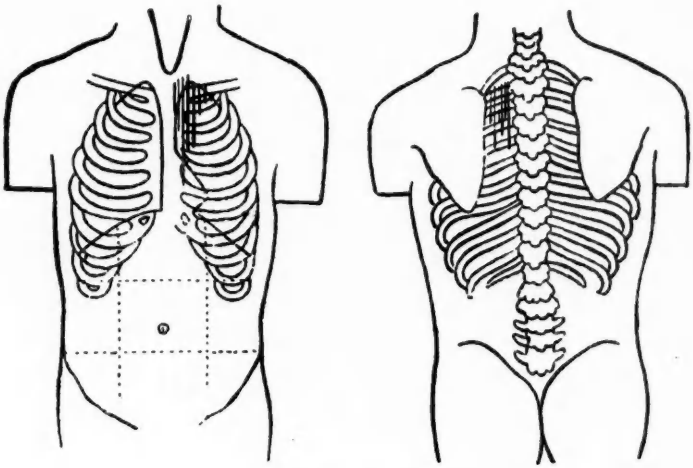

FIG. 4.
Showing the physical signs found in Group III.

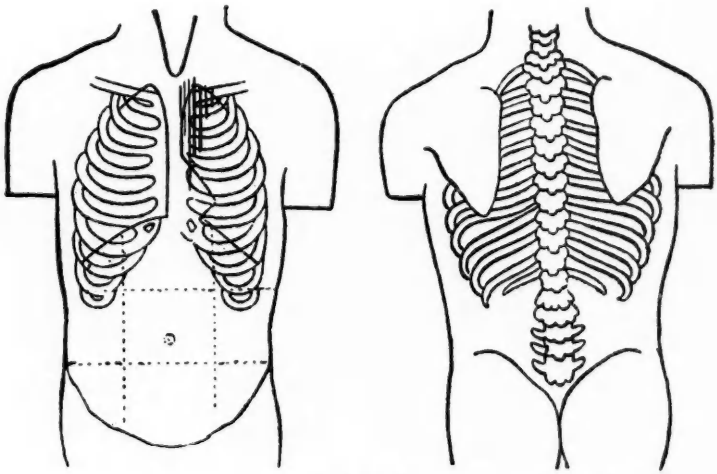

FIG. 5.
Showing the physical signs found in Group IV.

Group IV.—This group was composed of 23 children, 11 boys and 12 girls. The sign characterizing this group is exactly similar to that of Group III, except that the murmur is not audible in the back.

Two of these showed in addition signs of slight cardiac enlargement, two were noted to have a high colour, and three were said to become dyspnœic on exertion. One complained of "heart attacks."

One was advised to play no games on account of the cardiac enlargement, but when last I saw him I was informed that he had won several races in the sports last summer. He was apparently none the worse for it.

Group V.—This comprised 8 children, 4 boys and 4 girls. The signs in this group were a general systolic murmur maximal at the pulmonary area, where it becomes continuous with a diastolic murmur, producing the so-called "machinery" or "humming-top"

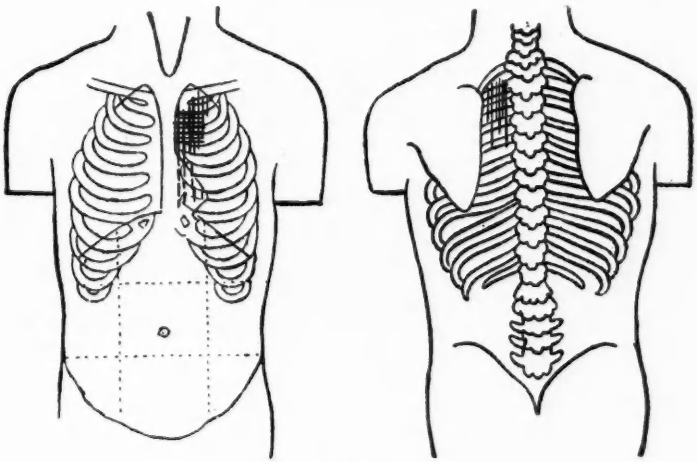

FIG. 6.
Showing the physical signs found in Group V.

murmur. The systolic part of the murmur is audible in the back, and the second sound at the pulmonary area is very accentuated. There is also a general systolic thrill all over the præcordium. Five of the children in this group showed also signs of cardiac enlargement.

There was no cyanosis. All attended school, but three were exempted from games and drill.

Group VI.—This group is formed by 3 cases, 2 boys and 1 girl. The physical signs of this group consist of a soft general systolic murmur which becomes much more marked at the aortic area, and is conducted into the neck, into the back, and in one case at least can be heard along the brachial arteries.

The apex-beat, while normally situated, is rather shock-like on palpation, and the first sound at the apex is very accentuated. The blood-pressure is within normal limits. None of these cases had any symptoms of disability.

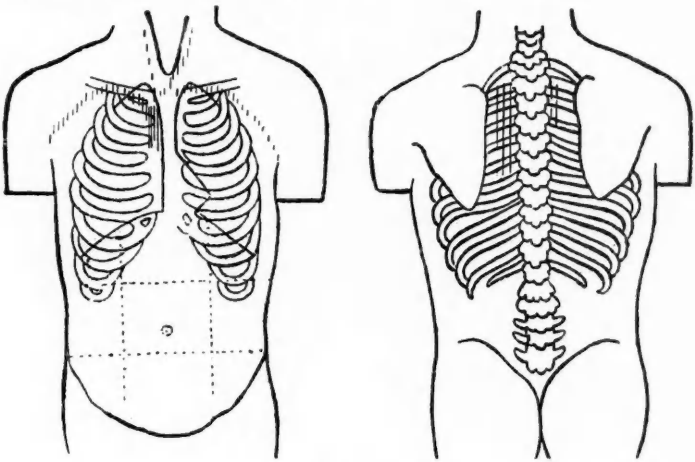

FIG. 7.

Showing the physical signs found in Group VI.

While it is difficult to assign any definite anatomical lesion to these various clinical signs, I venture to put forward the following suggestions. In the first group the systolic murmur maximal at the inner end of the third and fourth left spaces is, I think, probably due to a patency of the inter-ventricular septum. In Group II the murmur, which is similar, but heard also in the back, is probably due to the same condition more pronounced, but it has been separated in view of the uncertainty. The systolic murmur maximal at the pulmonary area characteristic of Group IV is probably due to a pulmonary stenosis, but whether the conduction of this murmur through to the back, as in Group III, is merely a more severe degree of this, or indicates the association of pulmonary stenosis with some other lesion, such as a septal defect, it is difficult to say. Post-mortem such a condition is often found, but the difficulty is that post-mortems are usually performed on patients showing far more severe symptoms. It is quite possible that in these two groups have been included several different types and combinations of anatomical defect. The signs of Group V are those characteristic of a patent ductus arteriosus with the "humming-top" murmur. The loud aortic systolic murmur conducted along the course of the larger arteries, heard in Group VI, probably indicates a sub-aortic stenosis.

These conditions have to be diagnosed from hæmic or functional murmurs and rheumatic heart disease. As regards the former, the murmur itself is different in quality, and is not so sharply localized as the murmur of a congenital malformation, and also it is not conducted.

The murmur of congenital defects is constant both in position and character. Many of these children

have been watched over a space of three years, and only minor alterations have been noted, if any at all. In rheumatic heart disease the murmurs have a very different localization, and are usually associated with evidence of cardiac enlargement and an alteration in the character of the sounds themselves.

The criteria on which these children have been debarred from games and drill at school are definite cyanosis and dyspnœa, or anything more than a slight degree of cardiac enlargement.

Most of the children in this series have been investigated by X-rays and electrocardiography, but although my analysis of these records is not yet complete, I feel quite safe in stating that neither of these adjuvants is of much value in the differential diagnosis of congenital from other cardiac lesions.

This collection of cases has not been followed long enough to be valid from the point of view of prognosis. One knows that all of them are possible candidates for bacterial endocarditis, but what proportion of them will ultimately succumb to this or to some form of cardiac failure it is impossible to say. It is interesting to note that this small series of cases shows that only 7·5 per cent. have any serious disability, and most of these disability only to a very slight degree.

Since they have successfully reached school age, there would appear no reason why these children should deteriorate, unless perhaps through being given some excessively laborious occupation.

THE DIFFERENTIAL DIAGNOSIS OF PRIMARY IRITIS IN THE EARLY STAGES.

BY

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PRIMARY iritis is an inflammation which begins in the iris itself, and is not the result of some other morbid process in the eye. Except, perhaps, in the traumatic variety, the condition is caused by a blood-borne infection. An eye so attacked manifests certain cardinal signs and symptoms which must be carefully looked for and their significance appreciated.

A. *Circumcorneal injection.*—In the early stages this manifests itself as a reddish or lilac-coloured blush around the margin of the cornea and extending for some distance into the sclera. If this is carefully looked at with the naked eye or, better still, with any lens of low magnification, the vessels are seen to be straight and hair-like, radiating out from the corneal margin and situated beneath the conjunctiva.

B. *Changes in the iris itself.*—These manifest themselves in a change in the normal colour, loss of lustre and indistinctness of its pattern. These changes are all due to an inflammatory œdema of the iris itself, an exudation on the surface of the iris and perhaps a clouding of the aqueous with inflammatory products. Thus a blue iris becomes greenish and a

brown iris yellow. The delicate crypts and folds become filled up, giving the iris a flat surface. The condition of the iris itself is, therefore, a very valuable guide, and if the opposite eye is unaffected a comparison should always be made of the irides in the two eyes.

C. *Contraction and impaired mobility of the pupil* result in the early stages from hyperæmia and spasm of the sphincter muscle.

A careful study of the symptoms is no less important.

1. *Pain* is often severe, and if carefully questioned the patient will say that it is not so much in the eye itself but rather in the brow, or the side of the nose, or that the whole side of the head is painful, and that it is neuralgic in character. From a differential diagnostic point of view it is very important to realize that iritis produces this type of pain.

2. *Lachrymation and photophobia* are due to reflex irritation of the fifth nerve. The fact that only tears are in excess and that there is no inflammatory discharge should be appreciated.

3. Diminution of vision is the result of the aforementioned conditions.

The common conditions from which an iritis has to be distinguished are :—

(*a*) Conjunctivitis.

(*b*) Episcleritis.

(*c*) Subacute glaucoma.

In *conjunctivitis* the eye is red, but if the hyperæmia be carefully investigated it will be seen that instead of the fine, straight, hair-like and lilac-coloured vessels situated around the circumference of the cornea, the vessels take their origin from arterial loops in the fornices of the conjunctiva, that their calibre is largest

at a point farthest removed from the cornea, that they are brick-red, tortuous, and move with the conjunctiva. This is a very different picture from that seen in an early case of iritis. Then, again, as there is an inflammation of a surface membrane, there will be a definite discharge instead of the lachrymation of iritis. This discharge may be so slight that none is visible, but the patient will probably state that the lids are glued together on waking from sleep, owing to an accumulation of the discharge during the night. In conjunctivitis the iris itself has a normal appearance with a normal pupil, and no diminution in vision unless the discharge is sufficiently great to produce a mechanical obstacle to sight.

The pain in conjunctivitis is usually quite different from that of iritis, it consists of a gritty feeling, the patient often seeking advice for the removal of a foreign body from the eye. This is in contrast with the severe neuralgic pain of iritis, which is in the bones of the skull rather than in the eye itself. In the later stages of an iritis both the circumcorneal and conjunctival systems of blood-vessels become affected, but if care is taken to examine the iris itself the diagnosis will not be missed.

Episcleritis was a relatively rare disease a few years ago, but has recently become much more common. It occurs more frequently in the autumn months, and may assume epidemic proportions. It attacks adults of middle age, and is caused by an inflammation of the connective tissue between the conjunctiva and sclera, or the superficial layers of the sclera itself. Although the disease may show itself anywhere in the anterior part of the eye, the commonest situation is close to the corneal margin. The importance from a differential diagnostic point

of view is that the inflammation, as a rule, attacks only a segment of the sclera, the rest of the eye being clear. Both the conjunctival and deeper vessels are involved, and the hyperæmia is often more purplish than red. In the more severe cases there is a definitely raised nodule in the centre of the inflamed patch. There is no discharge from the eye, but pain, lachrymation and photophobia. The pain is variable, sometimes hardly complained of, but in other cases it is severe, often of a neuralgic type, and situated in the bones of the orbit and side of face. The iris, at any rate in the early stages of the disease, is normal, the pupillary reactions also being unaffected. This condition is commonly mistaken for iritis, but the fact that the disease is localized to a segment of the sclera and that the iris is normal should present no difficulties of diagnosis.

I must also refer to that type of *subacute glaucoma* which presents only slight inflammatory signs, and is often the first appearance of the disease in an otherwise healthy eye. It may, on the other hand, occur during the progress of an already established chronic glaucoma of which the patient has made no complaint, the disease, therefore, not having been diagnosed. It is characterized by pain which the patient describes as aching in the eye itself, and perhaps more so in the bones of the orbit and side of the face. It is characteristic of the pain that it may have been severe in the early hours of the morning, that it wakened the patient from sleep, that it lasted perhaps an hour or so, but was considerably improved by the time he got up. The tendency is for such attacks to clear up completely, leaving the eye apparently normal, but further attacks are bound to occur until perhaps an acute bout is developed. If

seen during the morning after one of these attacks, the eye may show a faint hyperæmia due to the enlargement of the circum-corneal blood-vessels, and may easily be confused with a very early attack of iritis, but the iris itself is normal in colour and pattern, the pupil may or may not show some tendency to dilatation, but is never contracted as in early iritis, and the anterior chamber is frequently of less depth than in a normal eye. In most cases, if the cornea be examined with the naked eye, it will have a normal appearance, but if any weak magnifying lens is used a slight clouding or perhaps a ground-glass appearance may be seen. This is due to an œdema of the corneal epithelium produced by the increase of the intra-ocular tension at the time of the attack, and may persist for some time. The diagnosis of glaucoma has, in the past, largely depended on the presence or not of an increase in the intra-ocular tension; but it is now known that at any rate in the early stages of the disease this may only be present for a few hours during the twenty-four, and although one should never fail to take the tension, its absence does not necessarily exclude the presence of glaucoma. In these early and transient attacks of glaucoma the fundus and optic discs are perfectly normal, pathological changes being present only if the subacute attack is grafted on a chronic condition.

I have endeavoured to emphasize the importance of these transient attacks of glaucoma, as little mention is made of them in the literature, and yet the importance of bearing them in mind cannot be over-estimated; for should an eye in this condition be mistaken for an early iritis, and atropine be used in the treatment, an acute glaucoma would inevitably result.

The differential diagnosis of iritis in the very

earliest stage is of the utmost importance, for if it is recognized and adequately treated at once the duration of the disease is considerably lessened and vision often but little impaired; but its treatment necessitates the use of atropine, and before this potent drug is used there should be no possible doubt as to the diagnosis.

Reviews of Books

Anatomy in the Living Model. By D. WATERSTON, M.D., F.R.C.S.E., F.R.S.E. Pp. xvii., 255. Illustrated. London: Hodder & Stoughton. 1931. Price 25s.—The preface of this work affords no clue as to what particular section of the medical public it is addressed to. If it is to the average student of medicine, we can imagine his holding up his hands in horror at the very idea that, somewhere in his overcrowded curriculum, he must find time to study it, composed as it is of a mixture of various kinds of anatomy (systematic, surface, and what may be called artistic), with some physiology and comparative anatomy thrown in. What would a student say in private if, sometime presumably in his pre-clinical days, he were required to devote special attention to the study of the colour of the skin and the physiology—or is it pathology—of "goose-skin"? The Basle terminology is adopted, so we think it a pity to resuscitate the sub-costal plane as a means of sub-dividing the surface of the abdomen instead of the more desirable transpyloric plane of Addison; moreover, we must surely make up our minds once for all what plane we are going to use in dividing the abdomen vertically. Are not the pure anatomists agreed that the lateral vertical plane is to be preferred to the mid-Poupart or the mid-clavicular? Perhaps these are not points of great practical importance, but the student must know just where he stands, with examiners at any rate. The clinician will disagree with the statement that the umbilicus is of little value as a landmark: he uses it every day, and its position is quite sufficiently fixed for his purpose. Seeing that the book is so largely devoted to the study of surface structures, it is curious that the breast seems to have escaped notice. Altogether rather a disappointing book, whose appeal we fear will be to a somewhat limited circle of readers.

The Treatment of Asthma. By A. H. DOUTHWAITE, M.D., F.R.C.P. Pp. viii., 164. London: H. K. Lewis & Co. Ltd. 1930. Price 7s. 6d.—In his preface the author states that the object of the book is to present an epitome of modern medical knowledge on asthma with special reference to treatment. He has certainly succeeded. The reader has a

feeling that the subject is presented dispassionately without overstressing particular aspects of the condition. The division of asthma into primary and secondary is of great practical importance, and affords a sound method of approach for both diagnosis and treatment. The author's description of physical signs, in which he clearly differentiates early and late cases, the latter associated with definite organic changes in the chest, is most useful and, later in the book, affords a basis of treatment by physiotherapy, a method which is considerably neglected. The book contains a useful summary of the recent work on metabolism, allergic reactions, and bacteriology. Prominence is given to the recent work of Oriel, which seems likely to prove of considerable diagnostic value. The therapeutic section of the book contains a well-balanced account of the accepted methods of treatment. Prominence is given to the difficulties of desensitization, and tribute is paid to the importance of psychotherapy; but the author lays special stress on the great importance of remedial exercises and physiotherapy from the prophylactic point of view, in early cases, in order to prevent the development of grave organic changes in the thorax which must develop sooner or later in neglected cases.

Therapeutic Uses of Infra-Red Rays. By W. A. TROUP, M.C., M.B. Pp. xii., 57. Illustrated. London: Actinic Press Ltd. 1930. Price 5s. 6d.—So much has been written about the uses of ultra-violet rays in the treatment of diseased conditions, that it has been for several years the common practice to utilize this form of energy in some forms of tuberculosis and other conditions as a matter of course. But little has been heard of the use of infra-red rays. Dr. Troup has, therefore, produced a useful little monograph which serves to introduce to us the various uses to which these rays may be put. Heat in some form or another has been recognized as a beneficial agent, and various methods of utilizing heat, from poultices to diathermy, have been in vogue. Now it has been found that a local, penetrating heat ray can be at the command of the practitioner from sources actuated by electricity and easily manipulated. Dr. Troup describes the various lamps which are in the market and their field of usefulness. He tells us of the action of these rays in arresting and relieving pain, of the absorption of effused products round sprains and injuries, and the reconditioning of paretic muscles. If all that he claims for this agent is true, then none of us

can afford to do without one of these infra-red lamps, and Dr. Troup's book to guide us in its use. The book is very short and concise and takes but an hour to read, but it is pregnant with suggestions of a helpful kind, and we welcome it as the first of its kind in England.

Emergency Surgery. Vol. I: Abdomen and Pelvis. By HAMILTON BAILEY, F.R.C.S. Pp. xviii., 380. 324 illustrations. Bristol: John Wright & Sons Ltd. 1930. Price 25s.—The present volume, which deals with the emergency operations on the abdomen and genito-urinary system, has compressed within its handy size more wisdom than is found in most of the far larger text-books on the subject. Moreover, there is a most admirable clarity of diction and illustration. The author has conferred a great boon on the profession by a discriminate collection of the really useful points from the countless monographs and latest practice of our day. These he has related to his own experience, and the result is a convincing compendium. Where the matter and the manner of its presentation are so much in advance of current works, it is hard to select chapters either for special praise or for criticism. The author's emphasis appears placed somewhat too much on the expectant treatment of appendicitis, so that the inexperienced might neglect to operate as soon as is desirable. This and a few minor points of technique are negligible features compared with the general merits of the work: it makes clear the indications for emergency surgery, and still clearer the steps of each operation; no book gives such lucid and graphic descriptions of operative method, and so many hints to overcome the little hitches that beset the path of the young surgeon. The illustrations are extremely well chosen, and are reproduced with the excellence that we have learnt to expect from the firm of Wright and Sons. There is an adequate index.

Stepping Stones to Surgery. By L. BATHE RAWLING, F.R.C.S. Pp. xv., 227. Illustrated. London: H. K. Lewis & Co. Ltd. 1930. Price 12s. 6d.—This book is designed, in the words of the author, to provide a bridge for the gap which separates anatomy and surgery. It is a combination of applied anatomy and elementary surgery and is arranged in thirty-one chapters, each one of which deals with a separate region of the body, and commences with a short description of a clinical case of some disease or injury of the part under consideration. This plan

makes for readability, a great desideratum in a students' text-book on a subject which is apt to be shirked, although it tends to make the work somewhat scrappy and disjointed. It is doubtful if every surgeon will accept the statement in the last sentence of the book, that the subscapular glands are rarely involved in carcinoma of the breast. A slang word like "innards," even in inverted commas, seems rather out of place in a scientific work. There are a number of misprints. These are small matters in a book which should be of great use in acquiring knowledge of a difficult but important subject. The index and the illustrations are adequate.

The Student's Handbook of Surgical Operations. By Sir FREDERICK TREVES, Bart., G.C.V.O., C.B., LL.D., F.R.C.S., and CECIL P. G. WAKELEY, F.R.C.S., F.R.S.E. Fifth Edition. Pp. xii., 535. Illustrated. London: Cassell & Co. Ltd. 1930. Price 10s. 6d.—This book has been deservedly popular ever since its first appearance in 1892. By skilful pruning and grafting Mr. Wakeley has contrived to bring it up to date, while preserving its convenient size and arrangement. Some illustrations have been omitted and others added, but it is remarkable how many of the originals still fulfil their purpose and consequently remain. Still more obsolete or obsolescent procedures might have been omitted, and further modern technical improvements might well have been incorporated. Amongst the last are the use of intratracheal anæsthesia and of the "blood-sucker" in mouth operations; the diathermy knife; and fascial sutures in the repair of large hernias. One paragraph three-quarter way down page 395 is unintelligible and needs re-writing, but there are very few typographical errors. We would point out that hemithyroidectomy is seldom a sufficiently drastic operation for the cure of exophthalmic goitre. These are, however, minor defects, and there are many useful additions, notably a clear and simple chapter on the uses of radium in the treatment of cancer. The present edition is likely to prove as helpful to and as popular with the student of to-day as former editions have in the case of his predecessors.

Congenital Club Foot. By E. P. BROCKMAN, M.Ch., F.R.C.S. Pp. viii., 110. Illustrated. Bristol: J. Wright & Sons Ltd. 1930. Price 10s. 6d.—This monograph was awarded the "Robert Jones" Gold Medal for 1928, and it is the only up-to-date book to tackle the problem of congenital talipes equino-varus. The opening chapters contain an interesting

review of the literature with an accurate description of the nature of the deformity. Chapter IV. deals in a masterly manner with the pathological anatomy of the common variety of club foot. The author points out that there is essentially a failure of development of all the structures of the foot, with a congenital subluxation of the astragalo-calcaneo-scaphoid joint. Failure to correct this subluxation is the prime cause of the so-called relapse cases. The author is of the opinion that the deformity should be dealt with by open operation in all cases not readily responding to manipulative measures and he describes a new operation for this. His operation entails an extensive dissection of the structures of the sole of the foot, whereby the contracted muscles are lengthened and the scaphoid separated from the sustentaculum, thus enlarging the socket for the head of the astragalus. From the description, the operation appears unnecessarily severe; but, as the author points out, the trauma is probably not greater than that produced by repeated violent manipulations. We have no experience in his own operation, but the case reports are its justification. The illustrations have been well chosen and excellently reproduced. The book is readable and well balanced, and records yet another advance in orthopædic surgery.

The Treatment of Chronic Deafness by the Electrophonoide Method of Zund-Burgüet. By G. C. CATHCART, M.D. Second Edition. Pp. xiii., 111. London: Oxford University Press. 1931. Price 5s. **Deafness and its Alleviation by Operation.** By V. NESFIELD, F.R.C.S. Second Edition. Pp. vii., 169. Illustrated. London: H. K. Lewis & Co., Ltd. 1931. Price 10s. 6d.—The first of these two books is a reprint of the edition recently noticed in these columns. The author takes us to task for seeing a resemblance between his cherished but mysterious machine and Abram's box, so we must tread warily. The essence of our criticism was that the method involves from 12 to 72 or more "treatments" with an intricate and expensive apparatus, and that the claim of absolute and unvarying accuracy for the only "test"—the author's voice—must prove a *σκάνδαλον*. This edition shows no improvement on the former: even the quotation from Fitzgerald's *Omar Khayyám* retains its Limerick metre. The second work seems at first sight to be written in the advocacy of Phenolaine, eight of the eleven local applications advised for nose and ear and numerous other passages recommending this proprietary

preparation. And we cannot but recall the laudatory mention of the same drug in *Nesfield's Ophthalmic Surgery*. For our author is no narrow specialist; his activities have included those of Prospector (*sic*) to the R.C.S., bacteriologist, public analyst and "inventor of the chlorine and iodine processes of sterilizing water." A cursory account of the anatomy and physiology of the ear leads us via some very speculative pathology to a far from clear description of "The Operation," apparently that usually associated with the name of Mr. Chas. Heath. A series of case records completes the volume. Of the 20 illustrations which serve to break up the text five are catalogue blocks of common instruments: the remainder indifferent line drawings, eight being copies of text-book plates so well known that the author only deems it necessary to "acknowledge" two. Repetitions, even of whole pages, spelling mistakes and grammatical errors (*e.g.*, foramen ovalis) are numerous. This also is a second edition: how wonderful are the ways of Allah!

Pharmacopœia of the Central London Ophthalmic Hospital. Pp. 30. London: H. K. Lewis & Co. Ltd. 1930. Price 2s.—This small volume gives a full list of the preparations used in the practice of an ophthalmic hospital. It should be a handy volume for those who wish to refer to the doses of drugs which are not frequently used in every-day practice, and of the strengths of the drugs and lotions which are of value in dealing with diseases of the eye.

Royal Army Medical Corps Aids to Dispensing. By Staff-Sergt. G. ASHTON, R.A.M.C. Pp. xii., 232. Aldershot: Gale & Polden Ltd. 1930. Price 6s. 6d.—Staff-Sergeant Ashton has been modest in the title he has given to this book, for it is a comprehensive if condensed summary of materia medica, the B.P., pharmacy, dispensing, and poisons and antidotes. Regarded as the text-book for Army compounders, it indicates a very great advance indeed on the pre-war standard of knowledge expected from them, and is put together in an excellent form for the student. The materia medica under each drug gives the macroscopic characters, doses, therapeutic action and B.P. preparations with their doses and strengths. A series of dose tables classifying the chief doses in order of magnitude precedes a very efficient synopsis of B.P. preparations with excellent tabular arrangement. A section on weights and measures introduces the reader to

practical dispensing. One is inclined to regret the tables on pp. 130–131, in which the author gives methods for the elaborate and unnecessary conversion of metric formulæ into apothecaries' formulæ, when it is so desirable to familiarize the student with the metric system as one for every-day use. Better to teach the student to make 200 mils. of Tr. Opii Ammon. than to make long calculations of conversion in order to make ℥vi of the preparation. The section on practical pharmacy is very good, and deals with most branches of the art. The sodium chloride might well be omitted from the paraffin spray on p. 165, and alkaloid cocaine should replace the hydrochloride. A useful chapter on poisons concludes a very practical book, an Army compounder's *multum in parvo*.

Clio Medica: a Series of Primers on the History of Medicine. Editor: E. B. KRUMBHAAR, M.D. New York. Paul B. Hoeber. 1930. Price $1.50 each volume. 1, **The Beginnings: Egypt and Assyria,** by W. R. DAWSON, F.R.S.E.; 2, **Medicine in the British Isles,** by Sir D'ARCY POWER, K.B.E., F.R.C.S.; 3, **Anatomy,** by GEORGE W. CORNER, M.D.; 4, **Internal Medicine,** by Sir HUMPHRY ROLLESTON, Bart., K.C.B., M.D.; 5, **Physiology,** by JOHN FULTON, Ph.D., M.D.—We have received the first five volumes of a series of handbooks which, under the general title of *Clio Medica*, aims at presenting in a concise and readable form a number of special phases in the history of medical science. The publishers, realizing that small, easily portable booklets have, since the times of the Aldine and Elzevir editions, been popular with busy students and intelligent readers, offer in this series books for the coat pocket or bedside reading. But a wonderful kernel of information is provided in each of the booklets. The names of the authors is sufficient guarantee that the subjects will be adequately and accurately dealt with. Dawson takes the beginnings of medicine as they developed in Egypt and Assyria from a welter of magic, superstition and priestcraft into systematic and rational therapeutics. Primitive and simple as their therapeutics were, we are reminded that anatomy arose out of the embalmer's art, whilst a number of the most valuable drugs in modern pharmacy were first put to medicinal uses by the Egyptians. The Assyrians possessed a recognized medical profession whose members employed drugs in their prescriptions which are, in the main, wholesome and rational, even though

incantations and charms formed an integral part of the ritual of treatment. Sir D'Arcy Power calls his account of Medicine in the British Isles "the barest outline," but he contrives to give a delightful thumbnail sketch of the history of the medical corporations which have governed medical education and practice in this country. Corner, on the history of Anatomy, guides the reader rapidly through the earliest phases in Greece and Rome to the Middle Ages, and then gives an admirable description of the rise and expansion of modern anatomy from Vesalius to histology, embryology and neurology. He even finds space to complain that teachers still try to compel each generation of students to memorize as nearly as possible everything gained since Vesalius and advocates the use of the great text-books for reference rather than memorization, so that study may be directed to principles and methods instead of mass assembly of facts. His illustrations are numerous and well-selected. Sir Humphry Rolleston deals with Internal Medicine in a more or less biographical manner, claiming, with justice, that the study of the published works and the individuality of the prominent figures of successive periods furnishes material for a good general survey of progress. Fulton takes a somewhat similar view of Physiology, weaving into his story significant details of the lives of those men who have contributed most to the advancement of our knowledge. When he comes to modern trends he expresses some preference for physiologists who will make the objective of their science the human body, and endeavour to comprehend *its* functions rather than those of frogs and cats and apes. "It were better," he says, "that many of the so-called 'general' physiologists recognize that they are not physiologists at all," and offers to them as more correct descriptions the titles of "biophysicists," "protein-chemists" or "electro-chemists." Thus it will be appreciated from this short review of five delightful volumes that the authors each in their own way have made the dry bones of history live, reminding us again and again of the goodly heritage of medicine to which we are heirs.

Editorial Notes

Sir Vernon Wills.

THE dismay with which all Bristol heard that Sir Vernon Wills had died suddenly was nowhere felt more keenly than in hospital and university circles. Succeeding his father as President of the General Hospital, he had at once shown an interest in the work which did not limit itself to attendance at meetings, nor even to generous financial support. Both of these, indeed, he gave. In addition, however, he had formed his own views of the constructive side of hospital management, and approved of the new proposals for union. That he would have taken a leading part in the development of the Bristol School of Medicine can scarcely be doubted. At all events, we may record our appreciation of what he had already been able to accomplish, and recognize gratefully that "being made perfect in a little while he fulfilled long years."

* * * * *

The General Hospital.

THE General Hospital has begun work in its new Out-patient Department and wards without any elaborate ceremony because of the death of its President. On 13th March, in the presence of the Committee and the Honorary Staff, Miss Hilda Wills formally declared the new premises open. Mrs. Wynne Wilson was also present. The replacement of the old Out-patient Department was long overdue, and the

Hospital was fortunately enabled by the munificence of the late Sir George Wills, Bart., to build a new one without incurring debt or having to make any public appeal. Built below "deck," the new department faces Commercial Road and Lower Guinea Street, and thus offers easy access to patients without bringing them through the rest of its premises. The new buildings comprise a Casualty Unit with Operating Theatre, an Out-patient Hall with rooms for the various departments, and two wards. One of these, a Children's Ward with sixteen cots, succeeds to that which was recently converted into a new operating theatre in the main building, which was formally opened by Lord Moynihan on 1st May, 1930. The Louisa Lucas Ward, given by Mr. Bernard Lucas, has at his request been devoted to the treatment of accident cases. It contains fourteen beds. These additions will set free in the old Out-patient Department space which has long been needed for the better housing of physiotherapy of various kinds and for an expansion of the X-ray Department.

It is hoped that the annexe which is to be built, in conjunction with the Royal Infirmary, at Winford will provide all that is needed in the shape of additional ward accommodation.

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National Council for Mental Hygiene.

THE National Council for Mental Hygiene is holding its second biennial Conference from Wednesday to Friday, 27th May to 29th May, 1931, at the Central Hall, Westminster.

The subjects to be discussed are: The human factor in international problems; the human factor

in relation to crime, in relation to industry, in relation to the social services, and in relation to education.

Tickets are issued at 7s. 6d. each, admitting holders to all sessions, or at 2s. each for the single sessions. Donations towards the organizing expenses will also be welcomed.

Tickets and all further particulars may be obtained from the Secretary, the National Council for Mental Hygiene, 78 Chandos House, Palmer Street, London, S.W.1.

Meetings of Societies

Bristol Medico-Chirurgical Society

The second meeting of the session was held at the University on 12th November, 1930, at 8.30 p.m. The President was in the Chair.

Mr. R. S. STATHAM gave an address on "**Ectopic Gestation.**"

The President pointed out that the subject was one of great importance to the general practitioner. He is the one who first sees the case, and as the time factor is so important much depends upon an early correct diagnosis. He was of the opinion that in the operation speed is of prime importance, and he agreed that as much as possible of the extravasated blood should be removed. It causes troublesome post-operative distension if left.

Dr. ROWLEY quoted a case where the first symptom was pain in the coccyx, and he wondered if anyone else had made the same observation.

Mr. RENDLE SHORT said the subject was of interest to the general surgeon as he often operated upon these cases. He agreed that as soon as the diagnosis was made the patient should be subjected to operation. He quoted one case in which the patient bled to death in four minutes after the rupture of the tube.

Drs. STOCK and FLEMMING had both noted that in these cases as soon as the bleeding was stopped the pulse very rapidly fell to normal.

Dr. H. ROGERS asked the speaker if he had had any experience with the Ascheim-Zondek test for the differential diagnosis in these cases.

Drs. ALEXANDER and LILY BAKER and Mr. GRIFFITHS quoted cases.

Mr. STATHAM in replying said that he had had no experience with the Ascheim-Zondek test, and thought that it would only lead to loss of valuable time. He remembered Dr. ROWLEY's case, but it was the only one in which he had noted this peculiar symptom. He thought that the measure of the pulse-rate was due to the speed at which the blood was lost, but as soon as this was stopped the rate rapidly fell again.

The third meeting of the session was held at the University on 10th December, 1930. The President was in the Chair.

Dr. ALEXANDER showed and described a case of **Striæ Atrophicæ,** and Mr. G. B. BUSH a number of X-rays demonstrating **Silicosis of the Lung.**

Dr. CAREY F. COOMBS showed and described a series of sections from the auriculo-ventricular bundle, normal and abnormal; also diagrams illustrating the pathology of the chief cardiac infections.

Dr. HERBERT ROGERS showed and described specimens illustrating **Necrosis of the Myocardium.** A paper based on these appears in the current issue.

Dr. BRUCE PERRY gave a paper on **"Congenital Heart Disease as seen in Elementary School Children,"** illustrated by lantern slides. This paper appears in the current issue.

Dr. C. E. K. HERAPATH stressed the importance of recognizing the signs of a patent inter-ventricular septum and of realizing that this condition entailed no cardiac disability.

Dr. RICHARD CLARKE said that he had found that the localization of the physical signs in congenital heart disease varied from one examination to the next. He thought that the alleged "heart attacks" were of no significance. He described how latent cyanosis could be made more obvious by

placing a limb in a hot bath. He stated that of the cases of congenital heart disease which he had seen in infancy only one-third had survived.

Dr. TAYLOR asked the fate of the cases of congenital heart disease, and suggested that if the figures given were correct the condition should be found more often post-mortem. Referring to Dr. Rogers's paper, he thought it was very difficult to be sure that the condition he described as an infarct of the auricle was not actually an infective condition.

Dr. A. F. ALFORD described a "heart attack" which he had observed personally in a child with a congenital malformation of the heart, and stated that it was indistinguishable from an attack of "petit mal."

Mr. JACKMAN thanked Dr. Coombs for showing his simple and easily comprehended diagrams of cardiac pathology.

Drs. COOMBS, ROGERS and PERRY replied.

The fourth meeting of the session was held at the University on 14th January, 1931. The President was in the Chair.

Dr. MAYES showed a number of X-rays.

Dr. A. L. TAYLOR showed and described lantern slides, illustrating silicosis and asbestosis of the lung.

Dr. NORMAN BURGESS showed and described two microscopic specimens.

Mr. A. W. ADAMS gave a paper on **"Spinal Anæsthesia."**

The PRESIDENT, Dr. GORNALL, Mr. KEMM, Mr. WOOD, Mr. GRIFFITHS, Mr. STOCK and Dr. CORFIELD discussed the paper.

The fifth meeting of the session was held at the University on 11th February, 1931. The President was in the Chair.

Sir EWEN J. MACLEAN gave an address entitled **"Sóme Reminiscences and a Forecast."** This will appear in our next issue.

The speaker indicated that he wished his paper to be followed by a discussion; those who took part were Mr. WRIGHT, Mr. WALTERS, Dr. ALEXANDER, Col. LISTER and Dr. PARRY.

Sir EWEN MACLEAN replied.

The sixth meeting of the session was held at the University on 11th March, 1931. The President was in the Chair.

Dr. A. L. TAYLOR showed and described pathological specimens and Mr. WANSBOROUGH a number of X-ray films.

Dr. H. H. CARLETON then gave a paper on **"Some Disorders of Movement and their Mechanism,"** illustrated by lantern slides. This will appear in our next issue.

Dr. BLACHFORD, Dr. GORDON, Dr. F. BODMAN and Dr. KENNEDY discussed the paper, and Dr. CARLETON replied.

The Medical Library of the University of Bristol,

WITH WHICH IS INCORPORATED

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the List in December, 1930.

	February, 1931.
Association of American Physicians (1) ..	1 volume
Dr. W. S. Bainbridge (2)	1 ,,
Carnegie Institution (3)	1 ,,
Michell Clarke Fund (4)	41 volumes
Professor E. W. Hey Groves (5)	9 ,,
Dr. M. Nierenstein (6)	1 volume
Philadelphia General Hospital (7)	1 ,,
Rockefeller Foundation (8)	1 ,,
Smithsonian Institution (9)	4 volumes
C. H. Walker, Esq. (10)	4 ,,
Wilmer Institution (11)	1 volume

Unbound periodicals have also been received from Professor Hey Groves.

THE ONE HUNDRED AND THIRTY-FIFTH LIST OF BOOKS.

The figures in round brackets refer to the figures after the names of the donors. The books to which no such figures are attached have either been bought from the Library Fund or received through the *Journal*.

Ablett, R. .. .. .. *Course in Physics for Medical and Dental Students* 1930

Aschoff, L. .. .. *Der Appendicitische Anfall* .. .. .. (5) 1930

Ashton, G. .. .. *Royal Army Medical Corps Aids to Dispensing* 1930

Bainbridge, W. S. .. *Consideration of the Psychic Factors in Surgical Diagnosis and Procedure* .. .. .. (2) 1930

Beckman, H. .. .. *Treatment in General Practice* .. .. (4) 1930

Boycott, A. E. .. .. *Transition from Live to Dead* .. .. (9) 1930

Brockman, E. P. .. *Congenital Clubfoot* 1930

Brown, W. Langdon, and Hilton, R. *Physiological Principles in Treatment* .. .. 6th Ed. (4) 1930

Cathcart, G. C. .. *Treatment of Chronic Deafness by the Electro-phonoide Method of Zünd-Burguet* 2nd Ed. 1931

Cavendish, H. .. .. *Rathbone Place Water* 1766

Cinchona Tercentenary Celebration and Exhibition 1930

Collected Reprints from the Wilmer Ophthalmological Institution of the Johns Hopkins University and Hospital. Vol. I. 1925 to 1929 .. .. (11) 1929

Collins, E. T. .. .. *History and Traditions of the Moorfields Eye Hospital* 1929

Concilium Ophthalmologicum, xiii, 1929 *Hollanda* .. .. 4 vols. (10) 1930

Cumberbatch, E. P. *Essentials of Medical Electricity* 6th Ed. (4) 1929

Curgenven, J. S. .. *Child's Diet* .. .. 3rd Ed. 1929

Davidson, L. S. P., and Gulland, G. L. *Pernicious Anæmia* .. (4) 1930

Davies, H. M. .. .. *Surgery of the Lung and Pleura* .. .. (4) 1930

Delafield, F., and Prudden, T. M. *Text-book of Pathology* 14th Ed. (4) 1928

Donnan, F. G. .. .. *Mystery of Life* .. .. (9)

Douthwaite, A. H. .. *Injection Treatment of Varicose Veins* 5th Ed. 1929

Douthwaite, A. H. .. *Treatment of Asthma* 1930

Drummond, J. C., and Hilditch, T. P. *Relative Values of Cod Liver Oil from Various Sources* .. .. (6) 1930

Evans, C. L. .. .. *Recent Advances in Physiology* 4th Ed. (4) 1930

Eyre, H. .. .. .. *Brief Account of the Holt Waters* 1743

Ferrée, C. J. .. .. *Soya Bean and the New Soya Flour* 1929

Flexner, S. .. .. *Hideyo Noguchi* .. .. (9) 1930

Fothergill, A. .. .. *Inquiry into Nature and Qualities of Cheltenham Waters* 1788

Géraudel, É. .. .. *Mechanism of the Heart and its Anomalies* .. 1930

Gray, H. .. .. .. *Anatomy* .. .. 24th Ed. (4) 1930

Gruner, O. C. .. .. *Canon of Medicine of Avicenna* .. .. (4) 1930

Gunn, T. A. .. .. *Introduction to Pharmacology and Therapeutics* 2nd Ed. (4) 1931

Halliburton, W. D., Hewitt, J. A., and Robson, W. *Essentials of Chemical Physiology* .. .. 12th Ed. (4) 1929

Haslam .. .. .. *Recent Advances in Preventive Medicine* (4) 1930
Helmont, J. B. von *Oriatrike or Physick Refined* 1662
Hess, A. F. .. .. *Rickets* .. .. (4) 1930
Hofmann, A. W. .. *Harrogate and its Resources* 1854
Hughes, E. .. .. *Seasonal Variation in Man* 1931
Jameson, W. W., and Parkinson, G. S. *A Synopsis of Hygiene* 3rd Ed. (4) 1930
Jellett, H. .. .. .. *Short Practice of Midwifery* .. 10th Ed. (4) 1930
Jellett, H., and Madill, D. G. *Manual of Midwifery* .. 4th Ed. (4) 1929
Jones, Sir R. .. .. *Injuries to Joints* .. .. .. 3rd Ed. (5) [1930]
Kelly .. .. *Directory of Bristol and Suburbs for* 1931 .. [1931]
King, J. .. .. .. *Essay on Hot and Cold Bathing* 1737
Lawrence, R. D. .. *Diabetic A.B.C.* .. .. (4) 1930
Lawrence, R. D. .. *Diabetic Life* .. .. 5th Ed. (4) 1930
Lehrbuch der Chirurgie .. .. Bds. 1 and 2 (5) 1930
Liddell, E. G. T., and Sherrington, Sir C. *Mammalian Physiology* 2nd Ed. (4) 1929
McMurrich, J. P. .. *Leonardo Da Vinci* .. .. (3) 1931
Massie, G. .. .. .. *Surgical Anatomy* .. .. (4) 1928
Methods and Problems of Medical Education 1930
Narrative of the Efficacy of the Bath Waters 1877
Osler, Sir William .. *Principles and Practice of Medicine* 11th Ed. (4) 1930
Parsons, Sir J. H. .. *Diseases of the Eye* .. .. (4) 1930
Park, W. H., and Williams, A. W. *Pathogenic Micro-organisms* 9th Ed. (4) 1929
Perry, W. J. .. .. *Gods and Men* .. .. (4)
Piney, A., and Wyard, S. *Clinical Atlas of Blood Diseases* .. .. (4) 1930
Rea, R. L. .. .. *Affections of the Eye in General Practice* .. 1930
Rogers, Sir L. .. .. *Recent Advances in Tropical Medicine* 2nd Ed. (4) 1929
Rose and Carless .. *Manual of Surgery* .. .. .. 13th Ed. (5) 1930
Schäfer, Sir E. S. .. *Essentials of Histology* .. .. 12th Ed. (4) 1929
Short, T. .. .. .. *Mineral Waters of Derbyshire, Lincolnshire and Yorkshire* 1734
Sobotta, J. .. .. *Atlas of Human Anatomy* Ed. from 7th German Ed. .. .. .. 3 vols. (4) 1923–29
Spenser, H. R. .. .. *Medicine in the Days of Shakespeare* .. (4) 1929
Stewart, C. P., and Dunlop, D. M. *Clinical Chemistry in Practical Medicine* .. .. (4) 1930
Stopford, J. S. B. .. *Sensation and the Sensory Pathway* .. (4) 1930
Stroganoff, W. .. *Improved Prophylactic Method in Treatment of Eclampsia* .. .. (4) 1930
Studies on the Diagnosis and Nature of Cancer .. ..
System of Bacteriology .. .. Vols, 1–5, 7 1930
Tandler, J. .. .. *Lehrbuch d. Systematischen Anatomie* 4 Bande (4) 1923–1929
Taylor .. .. .. *Practice of Medicine* .. .. 14th Ed. (4) 1930
Tenenbaum, J. .. .. *Riddle of Sex* 1930
Ten Teachers .. .. *Diseases of Women* .. .. .. 4th Ed. (4) 1930
Topley, W. W. C., and Wilson, G. S. *Principles of Bacteriology and Immunity* .. .. 2 vols. (4) 1929

Treatise on Mineral Waters			1766
Treves, Sir F.	*Student's Handbook of Surgical Operations*	5th Ed.	1930
Troup, W. A.	*Therapeutic Uses of Infra-red Rays*		1930
Wakeley, C. P. G., and Buxton, St. J. D.	*Surgical Pathology*		1929
Waterson, D.	*Anatomy in the Living Model*		1931
Wear, A.	*A.B.C. of Child Health*		1930
Williams, G.	*Minor Surgery and Bandaging*	20th Ed. (5)	1930
Williams, S.	*History of Road Water in Wiltshire*		1731
Wynter, J.	*Essay on Chronical Diseases*	2nd Ed.	1827

TRANSACTIONS, REPORTS, JOURNALS, ETC.

Association of American Physicians. Transactions. Vol. XLV	(1)	1930
Imperial Cancer Research Fund. Ninth Scientific Report	(5)	1930
Medical Directory, 1931		1931
Medical Society. Transactions. Vol. LIII.		1930
Philadelphia General Hospital Reports. Vol. XI.		1931
St. Bartholomew's Hospital Reports. Vol. LXIII and Supplement		1930
Progressive Medicine. December, 1930		1930
Smithsonian Institution. Annual Report for 1929	(9)	1930
Surgical Clinics of North America. December, 1930		1930

Local Medical Notes

EXAMINATION RESULTS.

University of Bristol.—Students of the University have recently passed the following examinations :—

M.D.—Albert Edwin Hayward Pinch.

M.B., CH.B. — *Second Examination* (*Part I.*). *Pass :* Kathleen G. Brimelow, F. C. Collingwood, Theodora M. Crabtree, J. G. Field, P. N. Heron, A. E. Jowett, S. D. Loxton, M. A. Nicholson, B. Ridgway, A. W. Woolley. *In Organic Chemistry* (*Completing Examination*) *:* T. R. V. Gurney. *In Organic Chemistry only :* G. W. Vowles.

M.B., CH.B.—*Second Examination* (*Part II.*). *Pass :* Grace J. V. Ball, Dorothy E. Barber, A. G. W. Branch (with distinction in Anatomy), J. R. G. Damrel, Rosalind M. S. Derham, N. H. Greenberg, J. N. Heales, A. J. Matheson, A. C. Molden (with distinction in Anatomy), Marion L. Tryon, F. L. Wollaston.

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L.D.S.—*First Professional Examination. Pass (in Dental Anatomy, Completing Examination):* I. R. R. Eskell, R. L. Royal.

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L.D.S., R.C.S.—*Final Examination.* G. H. Dakers.*

* Qualified.

Royal College of Physicians, London.—The Goulstonian Lectures were delivered at the College by Dr. Macdonald Critchley on 10th, 12th and 17th March. The subject was "The Neurology of Old Age."

Committee's Gold and Silver Medals.—These medals have been awarded to Mr. J. J. J. Giraldi and to Mr. G. F. Langley respectively.

Long Fox Memorial Lecture.—This will be delivered in the Autumn by Mr A. L. Flemming, whose subject will be "The Partnership between Anæsthesia and Surgery."

Radcliffe Prize for the Furtherance of Medical Science.—This prize has been awarded by the Master and Fellows of University College, Oxford, to Dr. W. H. Bradley, Medical Officer to Downside School.

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PLATE II

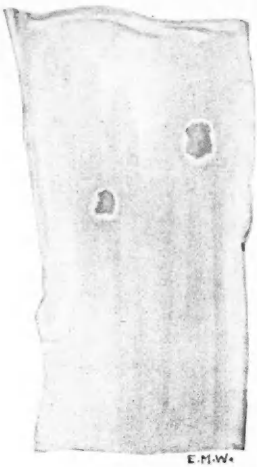


FIG. 1.

Islets of aberrant gastric mucosa in the upper end of the œsophagus, closely resembling areas of shallow ulceration. A fairly common post-mortem finding and of doubtful clinical importance.

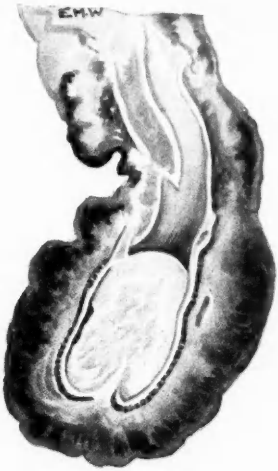
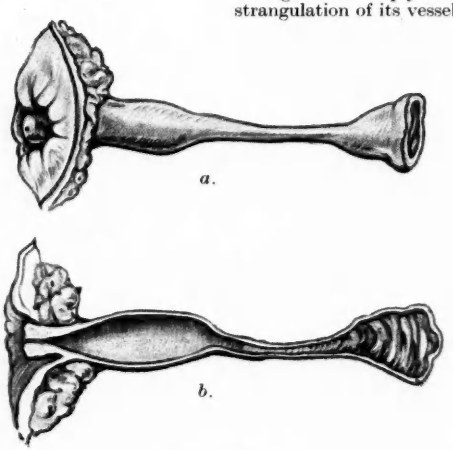


FIG. 4.

Nodule of accessory pancreatic tissue invaginating the tip of a Meckel's diverticulum to form the apex of an intussusception. The diverticulum is turned completely inside out, and its mucous membrane is turgid and deeply congested from strangulation of its vessels.



FIGS. 5 and 6.

a. Patent vitelline duct of varying thickness, continuous with a Meckel's diverticulum and associated with a small umbilical fibrous nodule, through which a small fæcal fistula had discharged since birth.

b. The same, laid open longitudinally, showing a complete lining of mucous membrane which is somewhat atrophic in its distal part.